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Hours and Health of Women Workers

Report of
ILLINOIS INDUSTRIAL SURVEY
December, 1918

[Printed by authority of the State of Illinois.]

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LETTER OF TRANSMITTAL.

SIR: The Illinois Industrial Survey appointed by you in January of this year, in accordance with the act of the Legislature, hereby submits to you its report. The shortness of the time, the war duties that have occupied every member of the Commission, and the inherent difficulties of the problem, will go far to explain many of the shortcomings of which the Commission is fully conscious.

The Survey desires to acknowledge help obtained in the use of records from the Factory Inspection Department, also the valuable advice given by W. F. Dodd of the Legislative Reference Bureau, particularly in the early days of the organization of the Commission. It is a pleasure to report the almost universal cooperation and courtesy of employers and employes in filling out questionnaires, answering questions, and giving investigation facilities to field workers. The Commission further desires to express its high appreciation of the services of its executive secretary, R. E. Blackwood, and his associates, especially Mrs. Janet R. Huntington, statistician, who, ably assisted by Miss Edith S. Gray, has had charge of special studies and statistical analysis.

We trust that this report may be helpful in establishing a physiologic basis for a proper length of a working day for women and in securing legislation concerning this very important subject.

Respectfully yours,

DR. JAMES B. HERRICK, *Chairman,*
ELIZABETH MALONEY,
AGNES NESTOR,
DR. SOLOMON STROUSE,
DR. GEORGE W. WEBSTER.

November 30, 1918.

To HONORABLE FRANK O. LOWDEN,
Governor of the State of Illinois,
Springfield, Illinois.

INTRODUCTION.

The Illinois Industrial Survey was directed by the Act of the Legislature creating the commission to "make a complete survey of all those industries in Illinois in which women are engaged as workers, with special reference to the hours of labor for women in such industries" and "the effect of such hours of labor upon the health of women workers."

To determine for any group of workers the effect of hours on health means a study of the health of the individuals composing such a group, both before entering upon their work and at various stages later. It means, in case of ill health, the elimination of possible contributory causes other than hours, such as heredity, infections clearly not due to hours of employment, improper home conditions as to food, light, ventilation, sanitation. It means a consideration of the habits of the worker as to eating, sleeping, recreation, physical exercise, dissipation; whether there are long hours in transit to and from work; whether there are home worries, tiring home duties. To say that a given disease is due to long hours of work is unjustifiable, unless distinctly greater prevalence of such disease is shown in this group of workers in whom these other external conditions as well as shop conditions are the same. Or else, figures must be so overwhelming that by their very mass they carry conviction, outweighing all secondary factors. Such studies, though greatly to be desired, and so far almost unknown, are difficult to make without opportunity for long and careful observation. The frequent turn-over in work and the incompleteness of many shop records add to the difficulty. And though one may be scrupulously careful in trying to compare only work of similar character and with all factors constant except the hours of labor, there is one variable that is always difficult to measure, and that is the human element.

So, one must state frankly at the outset that these difficulties just enumerated that are inherent in the nature of the problem have made the investigation less searching and comprehensive than might be desired. The commission is fully alive to many shortcomings in the report. It has aimed, however, not to record or use incorrect facts and not to arrive at unwarranted conclusions.

It being impossible for the commission to determine satisfactorily and in a scientific manner the actual incidence of special diseases, as of heart, lungs, kidneys, blood, nervous system, etc., as related to hours of employment, it proceeded upon the following general plan:

1. To determine the number of women in industry, the number in different industries, and the number of hours of work, including facts as to overtime, Sunday and holiday work, etc. This would show present conditions, and by comparison with other years the

trend of the times as to hours of employment. This investigation was made by means of questionnaires for employers and employes, the latter filled out by field investigators as the result of personal interviews with the employe.

2. The trend of the times as to State legislation concerning hours for women and the status of Illinois are further shown by a summary of the laws of the various states as to hours of labor for women, with changes in recent years.

3. The health of employes was investigated in a general way by the questionnaire above referred to, in which the worker was asked as to her health and the influence of her occupation upon it.

4. The opinions of physicians who care for the health of women employes were sought as to the effect of hours on health. These were chiefly physicians employed by large manufacturing or mercantile houses.

5. The experience of other investigators has been drawn upon as a source of information that might help the commission to reach correct conclusions.

6. Intensive studies were made to determine to what extent fatigue might be manifested as the result of long hours. The rate of output, the incidence of accidents, and attendance records were investigated under long and short hour schedules in the attempt to show at what point fatigue enters as an element of danger or as a handicap to the efficiency of the individual worker.

Viewing the woman laborer as a working machine, the ideal number of hours would be such that the output, the result of her work, would be the greatest of which she is capable, thus securing for the employer the maximum of his salable product and for herself the maximum wage. In order that there may be this maximum economic return to both employer and employed, not only must there be freedom from illnesses which reduce the worker's efficiency, but there must be no undue amount of fatigue as the result of a day's labor, for fatigue predisposes to more serious illness, lessens accuracy and speed of work, diminishes output, increases accidents. Hours of labor must, therefore, not be so long as to preclude recovery from fatigue by rest from work and by sleep. No argument is needed to convince one of the unwise nature of the system referred to as occasionally encountered by the British Health of Munition Workers Committee (Memorandum No. 4, Employment of Women, p. 5), where women consumed fourteen hours in work and from four to six in transit to and from work, so that the day began for them at 3:30 a. m. and closed at 10 to 10:30 p. m. The human machine, with only five or six hours out of the twenty-four for sleep and rest, must inevitably be in poor working order and will ultimately completely fail. But just what is the number of working hours consistent with the necessary time of rest and recovery from daily fatigue is the question that confronts this committee, as it has others who have studied the matter. A word as to what is meant by fatigue may be inserted here.

By fatigue, as here used, is meant not alone the sense of tire and exhaustion, or the consciousness of letting down of one's energies. This is a common subjective manifestation of the condition. But in a physiologic sense, as shown by scientific investigations, fatigue is a condition of actual inability on the part of some of the structures of the body rightly to perform their functions, because of physical and chemical changes within those structures. Within the fatigued brain cell or nerve ending in the muscle, or the muscle itself, there have accumulated certain waste materials that act as obstacles to further efficient activity, that are in a sense poisons. And further, the supply of material necessary to create energy may have become reduced from the drain of excessively long or strenuous use. So, from a using up of the fuel supply, and especially from the accumulation of ash, there is a dying out of the fire that kept the cell at its full glow of activity. A period of rest enables the body again to accumulate the supply of fuel and to remove the waste; fatigue has disappeared.

When the body is thus fatigued, even though there may be no conscious ache or sense of weariness, fatigue is shown by the performance of acts in a more disorderly and inefficient manner than before. The efficiency of a worker thus handicapped may be shown by a lessened rate of output, which rate of output may serve as a measure of the degree of fatigue. To quote one of the most competent of modern investigators along this line: *"Industrial fatigue is a diminution of working capacity caused by the length or intensity of some activity at a 'gainful occupation.'" This diminution of working capacity as measured by output has been freely used in this study as a means of estimating fatigue.

But there is another angle from which this question may and should be considered. There is more to it than the securing to the employer and employe of the greatest financial return. Our working woman is a machine to be sure, but she is a human being, a daughter, a sister, a mother, a neighbor, a citizen. Questions of human rights come up, the right to liberty, to happiness, the right to earn what will permit of decent living or even a modicum of comfort, what will enable one to associate with one's neighbors with a feeling of self-respecting essential quality. What hours of labor are consistent with the securing or the retention of these rights to the woman in industry? How shall the State best protect her in these rights? How shall the State in its own interest see that these women, the mothers of our citizens of the future, are preserved in health so that they may perpetuate a vigorous and virile race?

A study of the questionnaire returned by employers and employes shows a trend toward a short day, i. e., one below the ten-hour day permitted by law in this State. In many places an eight-hour day is in vogue, in others a nine-hour day. But comparison with the hours five years ago shows there is a distinct reduction. What has brought this about we can not assert, whether pressure from the employed,

* Phillip Sargent Florence—Use of Factory Statistics in the Investigation of Industrial Fatigue, p. 20. Columbia University Studies in History, Economics and Public Laws. Vol. LXXXI. No. 3. 1918.

the employer's convictions that the short day is economically the wiser, or the altruistic desire to be humane, just and liberal. If this trend toward a shorter day is viewed as progress toward right and justice, Illinois in her statutes is stationary and dilatory, for she still permits the employment of women for a day of ten hours and stands almost isolated among the states in allowing a week of seventy hours. That this change in practice in Illinois is but a reflection of a similar change in the country at large is shown by the summary of the laws of the other states.

A fact of great significance as showing the drift of opinion is the testimony of many physicians in the employ of manufacturing and other corporations. A large number of these physicians, who judge from the standpoint of health, believe a day of eight hours only should be the limit for women. One said seven, and one six hours. We feel sure from conversation with, and knowledge of the character of, employers, that when once they are made to believe and see that more than eight hours' work robs a woman of some of her health and of some of her home privileges and pleasures, no one will be more eager and willing to advocate and uphold the short day than the employing class. And when their own physicians bear this testimony it must, perforce, have great weight in influencing the employer.

So, too, there will be no hesitation on the part of employers to the adoption of a short day schedule if it can be shown that production under the short day is equal to that of the long day. Opinions here differ widely, some employers admitting that a reduction to short hours may increase output while others maintain that such is not the fact. One employer very clearly stated his position when he said in substance that he would advocate the short or eight-hour day for women under any one of three circumstances: (1) When he was convinced that production under eight hours equaled that under the longer day; (2) when there was a national law making a uniform eight-hour day for the entire country so that manufacturers in one state could not (as he believed) produce, and therefore sell, more cheaply than those in another state; (3) when it was shown to him that a day of more than eight hours became inhumane in its injustice to the worker.

The Commission has reached its conclusions—we wish to make this point clear—almost entirely on the basis of its belief that its investigations show that longer hours than eight per day or forty-eight per week tend to produce harmful physiologic, or perhaps it would be better to say pathologic, fatigue in women workers. They further recognize, they can not do otherwise, that women as a class are not as strong as men, that many of them are of necessity more or less occupied outside their working hours with exacting home duties, and that many of them are to be the mothers of the future. For all these reasons the State should throw legal safeguards about them.

One other point. It has been contended that some occupations entail more fatigue than others; that eight hours of work of one kind may be more harmful to health, more exhausting than ten at another occupation. If it were possible with fairness to classify these occupations, it might be more just to have a diversified scale of hours of

work for women; in some industries six hours might be enough, in others perhaps more. But with the information at hand, it has seemed to the Commission that such an adjustment is at present impracticable. And its recommendation of a day of eight hours is made in the belief that it is close to the maximum that should be permitted.

That economic conditions are intimately interwoven with the question of hours of labor for women workers is self-evident. While from the wording of the law creating the survey there was warrant for investigating some of these economic questions, the Commission has tried to avoid these topics believing its main concern was with the health of the workers. What little there is of this character in the report—such as the relation of output to length of hours—has come in more as a by-product of our study of fatigue than as a principal finding.

CHAPTER I.

SUMMARY OF CONCLUSIONS.

Hours of labor of women have been studied in the United States for the last 50 years. They are under consideration in nearly every state in the Union. Many hour-regulating laws have been enacted but few have been the result of a thorough definite study of actual conditions.

The Illinois Industrial Survey has established a fact base for a comparison of the 8, 9 and 10 hour days in their bearing on the health and the productive ability of the worker. Although much remains to be done in applying these conclusions, in investigating the related issues of overtime, rest and lunch periods, night work, and in studying the other elements of industrial fatigue, such as speed, monotony, public pressure, etc., findings of this survey point toward very definite conclusions in regard to a shorter maximum for working hours for women.

This survey has made special study of the question of industrial fatigue as outlined in the introduction. Some study has been made also of accidents and night work.

The following statements cover the findings of the Illinois Industrial Survey. Each will be briefly explained in the sections of this chapter. Detailed findings will be presented in the chapters which follow:

1. Laws of the various states show a definite tendency toward the shorter work day for women.
2. Practice among Illinois employers is to shorten hours; a large proportion of employers are at present using shorter hours than the maximum permitted by law.
3. The tendency toward shorter hours is upheld and justified by the opinion and experience of physicians working in the industrial field.
4. Employes themselves testify to the value of short hours. Their reports show the good effect of a short working day on length of service and well-being of the employe.
5. The same employes produce more in an 8 or an 8½ hour day than when working longer hours in the same establishment.
6. The shorter work day shows an output steadier and better maintained throughout the length of the working day.
7. In seasonal industries, long hours result in a marked drop in production early in the busy season, while short hours in the same field show a production maintained or increased throughout the busy season.
8. The study of accidents shows that the two causes probably most operative are (1) speed of production (2) inex-

perience. The factor of fatigue does not appear to enter in the course of a given work day.

9. Workers in a night shift show a lower level of production than equally experienced workers on a day shift.
10. The physiological value of the eight-hour day is demonstrated by the studies made. It is shown also, in many instances at least, that the output is increased by the reduction in hours. Evidence collected by the survey points to the eight-hour working day as the standard which should be established. This is for its beneficial effect both on the health of the worker and on production in the industry.

Except where employes definitely limited their own output or where conditions in the shop made a normal rate of production impossible, it was found that shortened hours resulted in equal or greater production than longer hours formerly in use in the same shop. Analysis of figures on output at times ran counter to the belief of company officials who thought that the shortened hours in their shops were not as productive as longer hours.

While the number of investigations and the numbers investigated have been of necessity small, care has been exercised in each study made to eliminate varying factors, such as change of methods, of work, introduction of new machinery, better sanitary conditions, etc. With these factors constant, and the only varying element hours of work, it is believed our conclusions are justified by the facts discovered.

Fatigue is an index of health. Output fluctuates with fatigue. Accordingly, to study production under varying hour conditions is to study health. Dr. Frederick S. Lee in his study of industrial fatigue establishes the fact that a study of output is one of the readiest means to study fatigue, where other factors do not enter to explain output fluctuations.

The first four conclusions listed above are indicative of the desirability of a shorter working day. Conclusions 5, 6 and 7 are based on economic and health evidence establishing the value of the eight-hour work day.

1.

PRACTICE IN OTHER STATES FAVORS SHORT HOURS.

Since 1874, when the first law regulating women's hours of labor was passed, 38 states (including the District of Columbia) or 77.5% of all the states in the Union, have passed laws to regulate the working day for women. Within the last six years, nine states have passed such laws, and a number of others have decreased maximum hours previously established.

The length of the working day and week together with the number of states providing such regulations is shown by the following table:

	Number of states.		Number of states
8 hour day	7	48 hour week	2
9 hour day	11	54-55 hour week	15
10-11 hour day	20	56-57 hour week	11
		60-63 hour week	8
		70 hour week	2

Ten states prohibit night work for women and five states regulate night work by restricting the hours to fewer than the day maximum.

It is worth noting that the states which have recently passed laws to regulate hours have in general established short working days.

2.

ILLINOIS EMPLOYERS USE SHORT HOURS.

Reports from 2,410 Illinois employers, covering 103,119 employes, show that there is a strong movement toward lowered hours. In 1913, 33% of Chicago firms, and 23.2% of employes, had a working day of less than 9 hours. To-day 62.9% of firms and 70.8% of employes have such a working day.

In Illinois outside Chicago very much longer hours are worked. Only 32.6% of firms and 31.6% of workers, have a day under nine hours. While former figures for comparison are not available, it is probable that, as in Chicago, the present hours are much shorter than those of five years ago. "Down State" firms, however, are not meeting the present demand for shorter hours, and this fact is reflected in employe reports analyzed in Chapter IV.

The following table shows a brief summary of past and present hour conditions in Illinois:

	Per cent having working day of		Total number reporting.
	Under 9 hours.	9 hours and over.	
Chicago, 1913—Firms	33.0	67.0	3,049
Employes	23.2	76.8	101,643
Chicago, 1918—Firms	62.9	37.1	1,613
Employes	70.8	29.2	85,348
Illinois outside Chicago, 1918—Firms	32.6	67.4	797
Employes	31.6	68.4	17,771

3.

INDUSTRIAL PHYSICIANS SUPPORT SHORTER HOURS.

A group of 41 physicians of wide experience in industrial work reported on working hours and their effect on health of the worker. Of 35 physicians replying to the question "What in your opinion is the best length for the working day for women in industry?" 26 stated 8 hours, and 3 said fewer than 8 hours.

The value of these replies is indicated by the fact that the average length of industrial experience for these physicians was ten years, and that the average number of women cared for by each was over a thousand. These physicians' replies show the result of their observation and experience with women workers. They were clearly not influenced in reaching their opinions by the fact that they were employed by short hour firms, as a number of these firms were long hour firms.

It is the opinion of these physicians that in the interest of health 8 hours is the best working day for women in industry. Of those mentioning a week length, the majority said 44 or 45 hours. Other opinions expressed in reports of physicians were:

1. Long hours have a harmful effect on health. A beneficial effect was observed where hours have been shortened.
2. The long day has some harmful effect on the maternal functions, particularly in certain types of occupation.
3. Long hours tend to increase the number of industrial accidents, although a distribution of these through the day shows no clear connection with increased fatigue.

4.

EMPLOYES REPORT HOUR CONDITIONS.

Special study was made of 4,711 women working in Illinois firms. These employes were selected at random by field workers to obtain a representative census of opinion from employes themselves; 17 industrial groups and 6 occupational groups were studied.

This report shows that

(a) long hour firms show more complaints from employes;
(b) overtime is more frequent in long hour firms;
(c) the labor turnover is greater among long hour workers;
(d) workers who stand have the worst hour conditions;
(e) working mothers are most in need of protection in hours and other conditions of employment;
(f) Chicago workers have in general better conditions than those of Illinois outside of Chicago.

In Illinois outside of Chicago 58.8% of women working 61 hours or more per week made complaints concerning their work; while only 26.5% of those working 43 to 48 hours made complaints. In Chicago 51.8% of women working 61 hours or more per week made complaints, compared to 15.2% among those working 44 to 48 hours. The proportion of complaints for Illinois outside of Chicago, where long hours are worked, is 45.2% compared with 25.1% for Chicago.

Nearly one-third of the employes working 55 hours or more per week in Illinois outside of Chicago are required to work overtime. This proportion falls to a little more than one-fifth of those working under 55 hours. In Chicago overtime is more equally distributed among the various hour groups and is considerably less frequent on the average.

The relation between the labor turnover and the length of the working day is one of the most significant facts brought out by this study. It is shown that the firm where long hours are worked is not capable of developing a permanent working force to the same extent as the short hour firm.

The group working 61 hours or more per week shows the lowest proportion of employes who have been in their positions one year or over of any of the hour groups in Chicago or in the remainder of the State. The greatest permanence is found in the 43 to 48-hour group in Chicago and in the under 43-hour group in Illinois outside of Chicago. This finding brings out perhaps more clearly than any other the employe's reaction to long hours.

That employes who stand at work, and that mothers in industry, have the poorest working conditions, indicates the special necessity of

hour regulations to protect these classes. The proportion of long hour workers among the group which stands (Illinois outside of Chicago) is 68.1%. Among the workers who sit at work 56.8% appear in the long hour groups. In Chicago the proportions are 20.1% of long hour workers among the standing group and 3.5% among the sitting group.

Since the fact of standing indicates a greater liability to fatigue and ill health on the part of the worker, the need for regulating hours to better conditions for the standing worker is apparent.

Over three-fourths of working mothers (76.3%) in Illinois outside of Chicago are in long hour groups. For unmarried women this proportion is 57.0%. In Chicago the proportions of long hour workers are 17.9% for working mothers, and 9.5% for unmarried women. Here again is shown the necessity of regulating hours to protect the group most in need of favorable conditions.

Chicago workers show shorter hours than those in Illinois outside of Chicago. Fewer complaints are made by Chicago workers. Their average length of service, however, is somewhat less than that in the rest of the State. This fact is probably to be explained by the greater stability of the rural and small-town populations.

Remarks made by employes were analyzed. These support the same general conclusions, showing that the workers themselves are cognizant of bad conditions and of the need for remedying them.

5.

REDUCED HOURS DIMINISH FATIGUE AND INCREASE OUTPUT.

As already mentioned in the introduction, fatigue may be measured by output with the proper controls. The survey found three firms where a reduction in hours had been made without changing any other conditions affecting production. The industries in which these firms are classed are garment industry (A), soap industry (B) and corset industry (C).

In shops B and C the same group of workers was studied before and after the change in hours. In shop A the entire force in a single department was studied.

In shops A and B wages were increased at each reduction in hours, so that the same rate of production would yield the worker a wage greater than before the change. In shop C wage rates remained the same. In shop C, therefore, the desire to maintain equal wages might have been an incentive to greater production. In shops A and B this could not have been the case.

The following table shows changes in hours and output in the three shops studied:

	Length of period studied.	Decrease in hours per week.	Increase in total output. Per cent.	Increase in hourly output. Per cent.
A	4 years	54 to 48	About 2.	7.
B	9 months	55 to 48	3.97	11.8
C	1½ years	54 to 48	13.4	31.5

The greatest increase in production is found in firm C, where no wage rates were raised. In each of the other firms, however, a substantial increase in hourly and total output is found under the shorter hours. As all three firms have a Saturday half-holiday, the comparison amounts to a comparison between the 10 and 8½-hour day, or the 9 and the 8-hour day.

In factory A piece rates were raised 29.8% during the period studied. During the same period the cost of food increased about 30%, so that the wage increase was a money increase, rather than a real raise in the standard of living.

Workers studied in factory A were the buttonhole makers in a large garment factory. The production of 2 groups of 25 experienced workers was—54-hour week, 1,395 buttonholes; 48-hour week, 1,428 buttonholes.

In factory B the process studied was that of wrapping and packing a standard brand of soap. The average number of cases wrapped and packed per day under the 55-hour week was 42.8 cases. Under the 48-hour week, the average production per day was 45.5 cases.

In the corset factory studied the weekly output (as determined by the wage) increased 13.4% and the hourly output 31.6%, following the decrease in hours. This increase in production was not spasmodic, but was maintained over an entire year.

This study definitely shows that reduced hours diminished fatigue and increased output.

6.

RELIEF FROM MONOTONY BY CHANGE IN OCCUPATION.

Study was made of the dried beef canning room in one of the large packing plants. In this room two groups of girls were studied —(a) those working 10 hours in the packing room, (b) those working 9 hours in the packing room and 1 hour in the restaurant. Output per hour showed the presence of a large fatigue element among the workers in group A. The workers in group B were able to produce more in 9 hours than group A in 10. The average production for the 10-hour day was 1,010 cans, while the 9-hour workers produced an average of 1,080 cans per day, an increase of about 7%.

An interesting point brought out in a number of the special studies is the irregularity of the rate of output of long-hour workers. They produce at a very good rate for a very short time, but are unable to keep up this rate of speed, falling to a very low production, and then perhaps recovering slightly. The short-hour workers show a steadier rate of output, in which the maximum may be no higher than with the fatigued group, but where the minimum is so much higher as to more than make up for the longer hours worked by the other group.

7.

LONG AND SHORT HOURS IN SEASONAL TRADES.

Seasonal trades were made the subject of special study because it is in these trades that the demand for unlimited hours is most acute.

Two such trades were studied—the hat industry of Chicago and the canning industry of the villages and rural districts in Illinois. In each of these two industries shops having varying-hour schedules were studied.

In the hat industry two shops—A and B—were selected for analysis. Shop A runs 54 hours weekly in its busy season and shop B 66 hours, or 10 hours a day and 6 hours on Sunday. Shop A works Sundays only in extreme emergency.

Both shops showed fatigue during the busy season, as indicated by a diminished output after a maximum had been reached.

This study (which is explained in more detail in chapter 7) shows clearly the bad effect upon production of Sunday work, and of long hours continuing through even a short busy season. The 54-hour week is shown as preferable to the 66-hour week, in that the workers' productivity seems to keep up better, although both weeks appear too long for sustained speed in production.

The second study of seasonal trades deals with four corn canneries. In two of these four plants (A and B) the employes worked unlimited hours; in one (C), 10 hours per day; and in one (D), not over 8 hours per day. Cannery D has the highest production per hour of any of the four canneries. But, more significant still, the production keeps on a high level throughout the busy season. The minimum production per hour per week is about two-thirds of the maximum production, whereas in each of the other factories studied it is less than half.

This study clearly indicates the greater fatigue among the long-hour workers in canneries A, B and C, and the lesser fatigue among the 8-hour workers in cannery D. In fact, the physiological benefits in lessened fatigue as measured by the greater and more uniform productivity of the worker, make the 8-hour day in the canning industry a better unit than the longer day from the standpoint of health.

8.

SPEED AND INEXPERIENCE INCREASE THE NUMBER OF ACCIDENTS.

The distribution of accidents through the hours of the day shows no casual connection between fatigue and accidents. The number of accidents appears to vary directly with speed of production, falling when production is least.

This conclusion, based on three accident studies, covering in all 2,094 industrial accidents, is at variance with the findings of many industrial investigators, who claim that fatigue during a working day tends to increase the number of accidents suffered.

Inexperience is likewise found to be a large factor in promoting accidents. Fifty-nine and six-tenths per cent of accidents occur to employes of under six months' experience, whereas only about 35% of all employes have a length of service of less than six months.

Two factors which tend strongly to make for accidents are inexperience and speed of production. Whether the total number of

accidents in, for example, a 10-hour day is greater than the total number in a 9 or 8-hour day was not determined by the survey. Wherever hours had been shortened so many other factors entered that it was impossible to make valid comparisons of accidents in working days of various lengths. The probability, as suggested by other investigators, is that the long-hour day is productive of a greater total number of accidents than the short-hour day.

9.

NIGHT WORK IS MORE FATIGUING THAN DAY WORK.

A group of day workers in a printing plant, studied for 11 weeks, produced an average of 4,409 pieces per hour, while equally experienced night workers, studied during the same period, produced an average of 3,892 pieces per hour, or about 12% less than the day workers.

The output of the day workers increased through the week until Thursday, falling slightly on Friday and Saturday. The night workers, on the other hand, reached their maximum output per hour on Tuesday night, suffering a considerable drop in production during the last three days of the week. This study indicates that night work was more productive of fatigue than an equal amount of work during the day.

This was the only analysis of night work which was made by the survey. This phase of the subject of hours has been covered by other investigators, who have analyzed and studied the dangers of night work and have made strong recommendations for its abolition.

10.

RECOMMENDATIONS OF THE SURVEY.

Studies which have been made lead to the following recommendations:

A. The Illinois Industrial Survey recommends the adoption of an 8-hour working day and a 48-hour working week for women in industry.

B. It recommends that this standard be applied to all industries covered by the present women's 10-hour law, including all office workers, and excepting graduate nurses.

C. It recommends a law based on the hours of labor law at present in force, with the substitution of an 8-hour maximum for the present 10-hour maximum, a maximum for the week of 48 hours, and the additions of such provisions as may make the law easily enforceable.

D. It recommends legislative provision for the further study of night work by women, as well as the need for rest periods, regulation of time for luncheon, and other similar conditions of employment of women.

E. The Illinois Industrial Survey recommends for passage the following bill:

BILL RECOMMENDED BY ILLINOIS INDUSTRIAL SURVEY.

A BILL

For an Act to amend sections 1, 2, 3, 4 and 5 of an Act entitled, "An Act to regulate and limit the hours of employment of females in any mechanical or mercantile establishment, or factory, or laundry, hotel or restaurant, or telegraph or telephone establishment or office thereof, or in any place of amusement, or by any express or transportation or public utility business, or by any common carrier, or in any public institution, incorporated or unincorporated, in this State, in order to safeguard the health of such employees; to provide for its enforcement and a penalty for its violation," approved June 15, 1909, in force July 1, 1909; as amended by an Act approved June 10, 1911, in force July 1, 1911, and to add five additional sections thereto to be known as sections 6, 7, 8, 9 and 10, and to amend the title of said Act.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That sections 1, 2, 3, 4 and 5 of an Act entitled, "An Act to regulate and limit the hours of employment of females in any mechanical or mercantile establishment, or factory, or laundry, hotel or restaurant, or telegraph or telephone establishment or office thereof, or in any place of amusement, or by any express or transportation or public utility business, or by any common carrier, or in any public institution, incorporated or unincorporated, in this State, in order to safeguard the health of such employees; to provide for its enforcement and a penalty for its violation," approved June 15, 1909, in force July 1, 1909; as amended by an Act approved June 10, 1911, in force July 1, 1911, be and the same are hereby amended and that five additional sections to be known as sections 6, 7, 8, 9 and 10 be added thereto, and the title of said Act shall be amended and the same shall read as follows:

Sec. 1. That no female shall be employed in any mechanical or mercantile establishment, or factory, or laundry, or hotel or restauraut, or hospital, or telegraph or telephone establishment, or in any office, or in any place of amusement, or by any person, firm or corporation engaged in any express or transportation or public utility business, or by any common carrier, or in any public institution, incorporated or unincorporated, in this State, more than eight hours during any one day, or more than forty-eight hours in any one week. The hours of work may be so arranged as to permit the employment of females at any time so that they shall not work more than eight hours during the twenty-four hours of any day or more than forty-eight hours in any week: *Provided*, that the provisions of this section shall uot apply to graduate nurses, or nurses while in service in operating rooms.

Sec. 2. Any employer who shall require or permit or suffer any female to work in any of the places mentioned in section 1 of this Act more than the number of hours provided for in this Act, during auy day of twenty-four hours, or during any week, or who shall fail, neglect or refuse so to arrange the work of females in his employ that they shall not work more than the number of hours provided for in this Act, during the periods herein provided, shall be guilty of a misdemeanor and upon conviction thereof in any court of competent jurisdiction, shall be fined upon the first conviction for this offense in the sum of not less than ten ($10) dollars or more than thirty-five ($35) dollars; upon second conviction not less than fifty ($50) dollars or more than one hundred ($100) dollars; and upon third conviction and all subsequent convictions not less than one hundred ($100) dollars or more than five hundred ($500) dollars; or in the discretion of the court such employer may upon second and subsequent convictions either be imprisoned in the county jail for not less than one mouth or more than six months, or fined as above provided or both fined and imprisoned. In all cases where the employer has been found guilty under this Act, he shall stand committed until the fine and costs imposed upon him by the court shall be paid.

Sec. 3. The term "employer" as used in this Act shall include every person, firm or corporation, or agent, or manager of any person, firm or corporation employing females in the businesses specified in section 1 of this Act.

Sec. 4. The State Department of Factory Inspection shall be charged with the duty of enforcing the provisions of this Act and prosecuting all violations thereof.

Sec. 5. Every employer to whom this Act shall apply, shall keep a time book or record containing all the names and addresses of all female employees and showing for each day that his establishment is open, the hours during which each and every female in his employ to whom this Act applies is employed. Such time book or record shall be open at all reasonable hours to the inspection of the officials of the Factory Inspection Department. The failure or omission to keep such record or any false statement contained therein, or any false statement made by any person to an official of the Factory Inspection Department, in reply to any question put by such an official in carrying out the provisions of this Act, shall be a misdemeanor and shall be punishable on conviction by a fine of not more than twenty-five ($25) dollars for each offense and any person so convicted shall stand committed until such fine and costs shall be paid.

Sec. 6. Every employer to whom this Act applies shall post in a conspicuous place in every room where such women are employed a printed notice in the form which shall be prescribed by the State Inspector of Factories, which notice shall state the hours of commencing and stopping work and the hours when the time or times allowed for dinner or for other meals shall begin and end, and the employment of any such women for a longer time in any day than is so stated shall be a misdemeanor and subject the person convicted of the same to the penalty provided in section 5 of this Act.

Sec. 7. Any employer who discharges or in any manner discriminates against any employee because such employee has testified, or is about to testify, or because such employer believes that the employee may testify, shall be deemed guilty of a misdemeanor and the person convicted of the same shall be subject to the penalty provided in section 5 of this Act.

Sec. 8. The presence of any female in any of the places of employment mentioned in section 1 of this Act at a time when according to the provisions of this Act and according to the notice required by section 6 of this Act to be posted by the employer, she may not be lawfully working in such place of employment shall constitute *prima facie* evidence of her employment therein.

Sec. 9. Any employer, firm or corporation, agent or manager, superintendent or foreman of any person, firm or corporation, whether for himself or for such person, firm or corporation, or by himself or through a subagent or foreman, superintendent or manager who shall refuse admittance to premises or otherwise obstruct the factory inspector, assistant factory inspector or deputy factory inspector in the performance of their duties as prescribed by this Act, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than five ($5) dollars nor more than one hundred ($100) dollars for each offense, and shall stand committed until such fine and costs shall be paid.

Sec. 10. All Acts and parts of Acts in conflict herewith are hereby repealed. The title of said Act shall be amended to read as follows: "An Act to regulate and limit the hours of employment of females in any mechanical or mercantile establishment, or factory, or laundry, or hotel, or restaurant, or hospital, or telegraph or telephone establishment, or in any office, or any place of amusement, or by any express or transportation or public utility business, or by any common carrier, or in any public institution incorporated or unincorporated, in this State, in order to safeguard the health of such employees; to provide for its enforcement and penalties for its violation.

CHAPTER II.

THE TREND TO A SHORTER WORK DAY.

A tendency to shorten women's working hours is apparent from a study of State laws, and, within Illinois, from an analysis of employer's reports on hours worked in their establishments.

The regulation of the working day for women began in Massachusetts with the law of 1874. A similar law passed in Illinois in 1893 was declared unconstitutional by the courts. The first law made effective in this State was passed in 1909. In 1911 the present law was placed on the statute books.

This law in Illinois permits a 10 hour working day and a 70 hour working week—the longest week anywhere permitted by a state placing regulations on hours.

At each legislative session since 1911 bills have been introduced to shorten the length of the working day. A bill in 1913 provided for a 54 hour week. In 1915 a bill was introduced calling for a 9 hour day and a 50 hour week. In 1917 a measure for an 8 hour day was introduced and defeated.

An analysis of the State laws regulating the hours of women's labor and a comparison of the present laws with those of 1912 (as reported by Josephine Goldmark in Fatigue and Efficiency, pages 291 ff.), shows several differences in the laws of these two periods, which are indeed striking.

I. In 1912, 29 states or 59.2% regulated the length of the working day for women. In 1918, 38 states (including District of Columbia) or 77.5% regulated the hours.[1]

II. The length of the working day has changed.

	8 hours.		9 hours.		10–11 hours.		12 hours.[2]	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
1912.....	3	10.4	4	13.8	19	65.6	2	6.8
1918.....	7	18.4	11	29.0	20	52.6	.....	.....

[1] Five states, Georgia, Mississippi, North Carolina, North and South Dakota, have such laws, but they are obviously nullified by their own wording. For example, the North Dakota law penalizes any owner "who having control, shall compel any women to labor in any day to exceed 10 hours." Such laws permit the women to work more than the maximum if they do it of their own accord. These states are not included in the analysis.

[2] 1, or 3.4%, regulated the hours per week, but not the hours per day.

III. A difference is noted in the length of the working week allowed by the different states in 1912 and 1918.

	48 hours.		54-55 hours.		56-57 hours.		60-63 hours.		70 hours.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
1912	2	6.8	7	24.2	8	27.8	10	34.4	2	6.8
1918	2	5.3	15	39.5	11	28.9	8	21.0	2	5.3

IV. More states are regulating the hours in specific industries.

1. Manufacturing establishments are now specifically mentioned in the laws of 34 states; in 1912 they were mentioned in only 24. Nine states are regulating the hours which did not regulate in 1912. Nine of the states which regulated the hours in 1912 in manufacturing establishments now have shorter hours than they did at that time. One state alone, New Hampshire, increased the hours per day from 9⅔ to 10¼, but decreased the hours per week from 58 to 54.
2. Mercantile establishments. At present the laws of 34 states specifically mention mercantile establishments as coming under the law. In 1912 only 19 states so provided, i. e., 15 states which did not regulate the hours in mercantile establishments in 1912 now do so, (decision on Ohio law was pending in the Supreme Court in 1912). Also 4 of the states which regulated hours in 1912 have now decreased hours.
3. Laundries. Thirty-three states now mention laundries, where only 23 mentioned them in 1912. Twelve new states now regulate them. Massachusetts and Ohio no longer mention laundries. Eight states which regulated in 1912 now have shorter hours than they did at that time. Arizona lengthened hours per week from 48 to 56, but retained the 8 hour day, and New Hampshire changed her hours as noted above.
4. Telephone and telegraph service. The hours of labor in these industries are now regulated in 19 states while in 1912 only 10 states regulated them. Nine new states are regulating these industries, and Ohio has decreased the hours.
5. Restaurants. At present 25 states, as opposed to 11 in 1912, are regulating the hours of labor in restaurants. Fifteen new states are regulating them (Massachusetts law no longer mentions restaurants), and 2 other states have shorter hours than in 1912.

6. Hotels. Nineteen states now regulate the hours in hotels while only 7 did so in 1912. One state has shorter hours than in 1912.

V. Progress in regulation of night work is also evident. Ten states now prohibit night work for women, while only 4 did so in 1912. Five states, while still permitting night work, limit the hours to fewer than the day maximum, while only 3 did so in 1912. One state, Connecticut, which permitted but limited night work, now forbids it.

A summary showing legislative provisions regulating women's hours in 39 states will be found in the Appendix.

EMPLOYERS REPORT DECREASED HOURS.

Reports from Illinois employers of women were secured by two means. First, the factory inspection cards were used to determine the total number of firms inspected, the number of these employing women and the total number of women employed. After this information had been collected, blanks were sent at random to about 10,000 of the employers listed on the factory inspection cards. Request for information included the number of hours worked per day and per week, rest periods, lunch periods, overtime, etc.

The main object of this study was to discover what general conditions on hours are to be found in the State at present and how these conditions compare with those of five or six years ago.

In 1913 an analysis of Chicago working hours was made by Miss Irene J. Graham (printed in the Journal of Political Economy Vol. XXIII No. 8, October, 1915.) Findings of this analysis, together with present hour conditions for Chicago and Illinois outside Chicago are shown by the following table:

	Total number reporting.	Percentage having a working day of			
		Under 8 hours.	8 and under 9 hours.	9 and under 10 hours.	10 hours.
Chicago 1913—Firms	3,049	3.4	29.6	40.3	26.7
Employes	101,613	1.7	21.6	50.8	25.9
Chicago 1918—Firms	1,613	15.9	47.0	31.1	6 0
Employes	85,348	11.1	59.7	22.0	7.2
Outside of Chicago 1918—Firms	797	7.0	25.6	43.8	23.6
Employes	17,771	3.3	28.3	37.7	30.7

Conclusions from the employer reports are as follows:

1. During the past five years hours have been shortened so that whereas only 33% of firms and 23.3% of employes worked less than 9 hours per day in Chicago in 1913, at present 62.9% of firms and 70.8% of employes work under 9 hours per day.
2. Illinois outside of Chicago shows conditions approximating those obtaining in Chicago in 1913. A slightly lower percentage of firms and a higher percentage of employes work less than 9 hours per day.

3. No former analysis of the hours of labor of women working in Illinois outside of Chicago could be obtained for comparison with conditions today. It is probably the fact that a general reduction has taken place so that "down State" conditions have improved proportionately as much during the past five years as those in Chicago.
4. It is easily seen that it is the larger firms which give short hours. The proportion of Chicago firms that have a working day under 9 hours is 62.9%. The proportion of employes with such a day is 70.8%.
5. An analysis of industries on the basis of hour conditions shows that outside of Chicago the long hour industries are iron and steel products, miscellaneous manufacturing and mechanical, restaurants and miscellaneous domestic and personal service. In Chicago the long hour industries appear to be bakers and manufacturers of other food products, lumber and furniture manufacturers, dry goods stores, laundries and restaurants.
6. In general the industries showing long hours are the "public pressure" industries where the desires of the customer must be met at once.
7. The radical change in the direction of the short hour day which is being instituted by employers themselves seems to show the employer's appreciation of the value of the shorter day.

Detailed tables showing conditions in Chicago and Illinois outside of Chicago follow. These tables are explained by the interpretation pages which follow them.

TABLE 1A—CENSUS OF WOMEN EMPLOYES, 1918, ILLINOIS OUTSIDE CHICAGO.

	Total firms—Factory inspection cards.	Total firms employing women.	Total women employed.	Average women per firm.	Total firms reporting.	Total firms employing women.	Total women employed.	Average women per firm.
TOTAL	21,674	10,949	74,955	6.8	892	799	17,887	22.3
I. *Agriculture, Etc.*	63	18	43	2.3	.....	.....	.....	.....
II. *Mines and Mining*	33	7	55	7.8	.....	.....	.....	.....
III. *Manufacturing and Mechanical*	7,204	2,980	36,741	12.3	310	275	13,527	49.1
1 Autos	1,252	299	468	1.5	24	16	53	3.3
2 Bakers	388	280	495	1.7	36	28	57	2.0
3 Breweries	65	29	99	3.4	.....	.....	.....	.....
4 Building and construction	473	143	929	6.4	.....	.....	.....	.....
5 Canning	46	44	1,627	36.9	55	48	2,203	45.8
6 Canvas and felt	23	21	141	6.7	8	8	50	6.2
7 Chemical industries	78	51	2,063	40.4	4	3	38	12.6
8 Cigars and tobacco	156	81	418	5.1	6	6	71	11.8
9 Clay, Glass, etc	198	54	454	8.4	.....	.....	.....	.....
10 Clothing	593	225	10,698	47.5	39	36	4,533	125.9
13 Confectionery	142	116	838	7.2	5	5	183	36.6
14 Electrical machinery, etc	293	139	850	6.1	4	3	118	39.3
15 Food products	302	142	2,812	19.8	25	24	852	35.5
16 Iron and steel manufacturing	3	1	1	1.0	6	6	189	31.5
17 Iron and steel products	977	342	2,868	8.6	28	24	921	38.3
18 Leather goods, etc	140	17	73	4.2	2	2	26	13.0
19 Lead, copper, etc	10	7	28	4.0	3	3	13	4.3
20 Lumber and furniture	675	218	2,933	13.4	17	17	302	17.7
21 Machinery manufacture	74	39	207	5.3	6	6	655	109.1
23 Oils	43	15	73	4.8	.....	.....	.....	.....
25 Painters and decorators	94	45	46	1.0	1	1	4	4.0
26 Paper and wood pulp	49	31	850	27.4	5	5	96	19.2
27 Plumbing	371	184	211	1.1	1	1	2	2.0
28 Printing and publishing	477	329	3,147	9.5	20	18	569	31.6
29 Road material	1	1	2	2.0	.....	.....	.....	.....
30 Rope and cordage	6	3	113	37.6	1	1	99	99.0
31 Rubber goods	8	6	37	6.1	.....	.....	.....	.....
32 Rugs and carpets	11	4	6	1.5	.....	.....	.....	.....
33 Scientific instruments	3	.....	.....	.....	1	1	19	19.0
35 Textiles	8	7	703	100.4	3	3	346	115.3
36 Watches, etc	13	10	3,801	380.1	2	2	2,025	1012.5
37 Miscellaneous	232	97	250	2.5	8	8	103	12.8
VI. *Transportation*	606	421	3,916	9.3	65	61	706	11.5
V. *Trade*	11,009	5,675	25,310	4.4	388	345	2,855	8.2
1 Agencies	104	57	86	1.5	1	1	13	13.0
2 Bankers and brokers	181	86	132	1.4	2	2	17	8.5
3 Food stores	3,719	1,813	2,876	1.5	46	35	88	2.5
4 Clothing and merchandise	3,090	2,021	17,656	8.7	258	241	2,511	10.4
5 Millinery	307	283	940	3.3	23	21	83	3.9
6 Hardware	695	171	241	1.4	5	3	5	1.6
7 Miscellaneous retail stores	2,235	1,008	2,506	2.4	35	29	74	2.5
8 Wholesale dealers	133	73	135	1.8	9	8	25	3.1
10 Miscellaneous trade	375	105	503	4.7	9	5	39	7.8
11 Public utilities	170	58	235	4.0	.....	.....	.....	.....
VI. *Professional Service*	281	232	586	2.5	.....	.....	.....	.....
VII. *Domestic Service*	2,476	1,615	8,302	5.1	129	118	799	6.7
1 Barbers, etc	325	29	55	1.8	2	1	1	1.0
2 Cleaning and dyeing	198	132	285	2.1	.....	.....	.....	.....
3 Hotels	389	359	1,647	4.5	35	33	203	6.1
4 Laundries	260	219	3,064	13.9	38	37	436	11.7
5 Restaurants	10.01	853	2,736	3.2	42	36	130	3.6
6 Others	303	23	515	22.3	12	11	29	2.6
VIII. *Clerical*	1	.....	.....	.....	.....	.....	.....	.....
IX. *Public Service*	1	1	2	2.	.....	.....	.....	.....

TABLE 1B—CENSUS OF WOMEN EMPLOYES, 1918, CHICAGO.

	Total firms—Factory inspection cards.	Total firms employing women.	Total women employed.	Average women per firm.	Total firms reporting.	Total firms employing women.	Total women employed.	Average women per firm.
TOTAL	48,084	30,844	231,306	7.4	1,754	1,614	85,349	52.9
1. *Agriculture, Etc.*	18	17	139	8.2	.....	.....	.....	.....
III. *Manufacturing and Mechanical*	20,873	13,631	121,096	8.9	906	839	41,254	49.2
1 Autos, etc	1,014	513	2,941	5.7	29	27	1,102	40.2
2 Bakers	1,274	1,086	5,349	4.9	18	17	665	39.1
3 Breweries	157	76	216	2.8	8	7	45	6.4
4 Building and construction	348	108	366	3.4	10	10	26	2.6
5 Canning	7	7	329	47.	.....	.....	.....	.....
6 Canvas and felt	184	146	1,271	8.7	35	35	877	25.1
7 Chemicals	291	216	2,383	11.	46	45	1,660	36.9
8 Cigars, etc	149	99	1,816	18.8	14	14	499	35.6
9 Clay, glass etc	214	130	408	3.1	39	34	659	19.4
10 Clothing	4,294	2,382	34,102	14.3	111	110	9,998	90.9
11 Coal, tar products	25	12	460	38.3	3	3	871	290.3
12 Coke	4	4	40	10.	.....	.....	.....	.....
13 Confectionery	167	131	4,803	36.6	46	46	2,214	48.2
14 Electric machinery manuf'g	277	193	3,521	18.2	40	38	2,122	55.8
15 Food products	495	338	12,310	36.4	69	65	7,836	120.5
16 Iron, steel manufacturing	198	100	498	4.9	10	10	117	11.7
17 Iron, steel products	1,327	799	5,674	7.1	93	75	2,943	39.3
18 Leather goods, etc	214	115	576	5.	25	22	299	13.6
19 Lead, copper, etc	354	161	297	1.8	17	16	720	45.
20 Lumber and furniture	954	596	7,746	13.	52	44	693	15.8
21 Machine manufacturing	304	220	2,000	9.	48	41	1,118	27.3
22 Millinery	207	152	3,460	22.7	9	7	183	26.1
23 Oils	4	3	7	2.3	.....	.....	.....	.....
24 Photo supplies	148	109	1,075	9.8	3	3	24	8.
25 Painters, etc	283	132	429	3.2	4	3	4	1.3
26 Paper, etc	149	110	1,165	10.5	17	17	418	24.6
27 Plumbing, etc	10	5	11	2.2	8	8	15	1.9
28 Printing, etc	6,554	4,834	18,561	3.8	84	81	2,969	36.7
29 Road material, etc	18	9	23	2.5	1	.....	.....	.....
30 Jute and cordage	8	8	35	4.3	1	1	9	9.
31 Rubber goods	52	41	354	8.6	2	2	34	17.
32 Rugs and carpets	35	22	226	10.2	2	2	55	27.5
33 Scientific instruments	69	61	1,569	25.7	14	13	1,334	102.6
34 Ship building	4	3	30	6.6	1	1	17	17.6
35 Textiles	103	90	842	9.3	15	15	1,338	89.2
36 Watches, etc	606	310	1,677	5.4	10	8	61	7.6
37 Miscellaneous	392	308	4,483	14.5	22	19	329	17.3
VI. *Transportation*	1,159	490	16,817	34.3	23	20	11,059	553.
V. *Trade*	21,390	13,338	67,924	5.	576	521	29,318	56.3
1 Agencies	422	324	2,237	6.9	27	27	437	16.2
2 Bankers, etc	161	111	467	4.	15	14	836	59.7
3 Food	10,123	6,286	12,584	2.	56	44	279	6.3
4 Clothing, merchandise	3,949	2,886	34,478	11.9	174	154	23,646	153.5
5 Millinery	651	610	2,441	3.8	7	5	17	3.4
6 Hardware, etc	1,033	557	1,935	3.4	7	3	22	7.4
7 Miscellaneous retail stores	3,935	1,868	6,710	3.5	64	56	472	8.4
8 Wholesale dealers	453	304	2,527	8.3	95	91	2,541	27.9
9 Office supplies	96	61	466	7.6	15	15	79	5.3
10 Miscellaneous trade	567	298	4,079	13.6	116	112	989	8.8
VI. *Professional Service*	429	331	984	2.9	39	36	189	5.3
VII. *Domestic Service*	4,173	2,999	24,164	8.	208	196	3,513	17.9
1 Barbers, etc	432	317	808	2.5	8	8	49	6.1
2 Cleaning and dyeing	851	542	1,417	2.6	37	37	321	8.7
3 Hotels	181	175	4,287	24.7	79	71	1,093	15.4
4 Laundries	725	410	7,033	17.1	29	28	1,116	40.
5 Restaurants	1,589	1,456	9,159	6.2	39	38	606	15.9
6 Other	395	99	1,460	14.7	16	14	328	23.4
VIII. *Clerical*	36	32	90	2.8	.....	.....	.....	.....
IV. *Transportation*	6	6	92	15.3	2	2	16	8.

INTERPRETATION OF TABLES 1A AND 1B.

The average number of women per firm in the firms reporting on hour conditions to the survey is 22.3 in Illinois outside of Chicago and 52.9 in Chicago. The factory inspection cards, dated in 1917 and 1918, show averages of 6.8 and 7.4 women per firm. That the average number of employes per firm reporting is higher than for the firms in the factory inspection cards is due to the fact that a number of very large firms sent in replies and these replies tended to raise the average.

It will be noted that in most industries the average for firms reporting and the total firms inspected are not widely different.

In a few cases the total women employed as reported by employers to the survey is larger than the total number of women employed according to factory inspection cards. This is due in most cases to the increased employment of women between the time of the two reports, probably due to war conditions. Many individual firms reported 50 or 100% more employes on their direct reports than were listed on the factory inspection blanks.

Tables 1A and 1B are valuable largely as a general census of the women employed in Illinois and the extent to which women are employed. Their bearing on hours of labor is not direct.

TABLE 2A—WORKING CONDITIONS AS REPORTED BY EMPLOYERS, ILLINOIS OUTSIDE CHICAGO.

	Firms.	Employes.
TOTAL	799	17,887
Total employes under 16 years of age	.....	566
Total employes 16 years and over	.....	17,285
No answer	.....	36
Number working less than 8 hours per day	56	590
Number working 8 hours, and less than 9	204	5,027
Number working 9 hours and less than 10	349	6,694
Number working 10 hours per day	188	5,460
No answer	2	116
Number working less than 43 hours per week	40	223
Number working 43 hours and less than 48	131	4,174
Number working 49 hours and less than 54	261	6,326
Number working 55 hours and less than 60	308	6,180
Number working 61 hours and over	50	566
No answer	9	418
Working overtime—yes	57	1,207
Working overtime—no	612	14,533
Working overtime—no answer	130	3,147
Work Sundays—always	113	747
Work Sundays—sometimes	66	1,067
Work Sundays—never	548	14,887
Work Sundays—no answer	72	1,186
Work nights—always	29	557
Work nights—sometimes	237	2,128
Work nights—never	467	14,228
Work nights—noanswer	66	974
Work holidays—yes	624	14,744
Work holidays—no	86	1,380
Work holidays—noanswer	89	1,763
Work Saturday P. M.—always	454	8,676
Work Saturday P. M.—sometimes	82	2,282
Work Saturday P. M.—never	153	5,941
Work Saturday P. M.—no answer	110	988
Lunch time—less than one-half hour	33	186
Lunch time—one half hour and less than 1 hour	107	4,322
Lunch time—1 hour and more	579	12,836
Lunch time—noanswer	80	543
Rest—yes	89	2,498
Rest—no	482	11,080
Rest—no answer	228	4,309

TABLE 2B—WORKING CONDITIONS AS REPORTED BY EMPLOYERS, CHICAGO.

	Total firms.	Total employes.
TOTALS	1,614	85,349
Number under 16 years of age	.....	2,690
Number 16 years and over	.....	82,622
No answer	.....	37
Number working less than 8 hours per day	257	9,451
Number working 8 hours and lees than 9	758	50,986
Number working 9 hours and less than 10	502	18,799
Number working 10 hours	96	6,112
No answer	1	1
Number working less than 43 hours per week	212	8,004
Number working 43 and less than 48	679	48,020
Number working 49 and less than 54	508	21,183
Number working 55 and less than 60	185	7,639
Number working 61 and over	24	373
No answer	8	130
Number working overtime	168	28,301
Number working no overtime	1,278	54,798
No answer	168	2,252
Number working Sunday—always	85	3,770
Number working Sunday—sometimes	100	10,996
Number working no Sundays	1,296	68,628
No answer	133	1,953
Number working nights—always	11	2,460
Number working nights—sometimes	195	4,812
Number working no nights	1,270	76,135
No answer	138	1,938
Number working holidays	1,342	78,051
Number working no holidays	184	6,831
No answer	88	467
Number working Saturday P. M.—always	354	19,052
Number working Saturday P. M.—sometimes	282	14,785
Number working no Saturday P. M.	926	51,164
No answer	52	348
Lunch—less than one-half hour	15	172
Lunch—one-half hour and less than 1 hour	654	65,510
Lunch—1 hour and over	886	19,076
No answer	59	591
Rest—yes	195	33,167
Rest—no	1,047	48,563
No answer	372	3,619

INTERPRETATION OF TABLES 2A AND 2B.

Percentage analyses of hours per day and per week as reported in tables 2A and 2B is made in subsequent tables. In Tables 2A and 2B are shown average conditions of labor for Illinois working women.

It will be noted that overtime is somewhat more frequent in Chicago than in Illinois outside of Chicago. Sunday and night work are less frequent. Holidays are more universal and Saturday afternoon work is less frequent for Chicago employes. The lunch period of an hour or over is somewhat greater outside of Chicago.

TABLE 3A—FIRMS CLASSIFIED ACCORDING TO HOURS PER DAY, ILLINOIS OUTSIDE CHICAGO.

	Number firms.	Under 8 hours.		8 and under 9 hours.		9 and under 10 hours.		10 hours.	
		Number	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	797	56	7.02	204	25.59	349	43.78	188	23.58
1. *Agriculture, Etc.*									
II. *Mines and Mining*									
III. *Manufacturing and Mechanical*	273	10	3.66	71	26.	94	34.43	98	35.89
1 Autos	16	1	6.25	8	50.	6	37.50	1	6.25
2 Bakers	28			6	31.42	11	39.28	11	39.28
3 Breweries									
4 Bldg. and Construction									
5 Canning	46	3	6.52	2	4.34	8	17.39	33	71.73
6 Canvas and felt	8			6	75.	2	25.00		
7 Chemical industries	3			2	66.66	1	33.33		
8 Cigars and tobacco	6	1	16.66	3	50.	2	33.33		
9 Clay, glass, etc									
10 Clothing	36			10	27.77	17	47.22	9	25.
13 Confectionery	5			3	60.	1	20.	1	20.
14 Electric machinery, etc	3			2	66.66	1	33.33		
15 Food products	24	1	4.16	7	29.16	8	33.33	8	33.33
16 Iron and steel mfg	6			2	33.33	3	50.	1	16.66
17 Iron and steel products	24	1	4.16	4	16.66	7	29.16	12	50.
18 Leather goods, etc	2					1	50.	1	50.
19 Lead, copper, etc	3			1	33.33	1	33.33	1	33.33
20 Lumber and furniture	17	1	5.88	4	23.52	8	47.04	4	23.52
21 Machine manufacturing	6			1	16.66	3	50.	2	33.33
23 Oils									
25 Painters and decorators	1			1	100.				
26 Paper and wood pulp	5					3	60.	2	40.
27 Plumbing and heating	1					1	100.		
28 Printing and publishing	18	2	11.11	9	50.	4	22.22	3	16.66
29 Road material									
30 Rope and cordage	1							1	100.
31 Rubber goods									
32 Rugs and carpets									
33 Scientific instruments	1							1	100.
35 Textiles	3					2	66.66	1	33.33
36 Watches, etc	2					1	50.	1	50.
37 Miscellaneous	8					3	37.50	5	62.50
IV. *Transportation*	61	16	26.22	25	40.98	14	22.95	6	9.83
V. *Trade*	345	13	3.76	88	25.50	203	58.84	41	11.88
1 Agencies	1			1	100.				
2 Bankers, brokers	2	1	50.	1	50.				
3 Food stores	35	3	8.57	11	31.42	13	37 14	8	22 85
4 Clothing, merchandise	241	6	2.48	53	21.99	155	64.31	27	11.20
5 Millinery	21			4	19.04	16	76.18	1	4.76
6 Hardware	3	1	33.33	1	33.33	1	33.33		
7 Misc. Retail stores	29	2	6.89	11	37.93	11	37.93	5	17.24
8 Wholesale dealers	8			4	50.	4	50.		
10 Miscellaneous trade	5			2	40.	3	60.		
11 Public utilities									
VI. *Professional Service*									
VII. *Domestic Service*	118	17	14.40	20	16.94	38	32.20	43	36.44
1 Barbers, etc	1					1	100.		
2 Cleaning, dyeing									
3 Hotels	33	5	15.15	12	36.36	9	27.27	7	21.21
4 Laundries	37	1	2.70	3	8.10	16	43.24	17	45.94
5 Restaurants	36			5	13.88	12	33.33	19	52.77
6 Others	11	11	100.						
VIII. *Clerical*									
IX. *Public Service*									

TABLE 3B—FIRMS CLASSIFIED ACCORDING TO HOURS PER DAY, CHICAGO.

	Number firms.	Under 8 hours.		8 and under 9 hours.		9 and under 10 hours.		10 hours.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent	Number.	Per cent.
TOTAL	1,613	257	15.93	758	46.99	502	31.12	96	5.95
I. *Agriculture, Etc*	.....	.....	.....	.....	.....	.....	.....	.....	.....
III. *Manufacturing and Mechanical*	839	98	11.68	398	47.43	308	36.71	35	4.17
1 Autos	27	7	25.92	15	55.55	5	18.51	.....	.....
2 Bakers	17	1	5.88	10	58.82	4	23.52	2	11.75
3 Breweries	7	.....	.....	6	85.71	1	14.28	.....	.....
4 Building and construct'n	10	2	20.00	7	70.00	1	10.00	.....	.....
5 Canning	.....	.....	.....	.....	.....	.....	.....	.....	.....
6 Canvas and felt	35	1	2.85	13	37.14	20	57.14	1	2.85
7 Chemicals	45	7	15.55	25	55.55	13	28.88	.....	.....
8 Cigars, etc	14	.....	.....	8	57.14	6	42.85	.....	.....
9 Clay, glass, etc	34	8	23.52	17	50.00	8	23.52	1	2.94
10 Clothing	110	5	4.54	38	34.54	65	59.09	2	1.81
11 Coal, tar products	3	1	33.33	2	66.66	.....	.....	.....	.....
12 Coke	.....	.....	.....	.....	.....	.....	.....	.....	.....
13 Confectionery	46	3	6.52	8	17.39	35	76.08	.....	.....
14 Electric machinery, etc	38	3	7.89	19	50.00	15	39.47	1	2.63
15 Food products	65	3	4.61	33	50.76	18	27.69	11	16.92
16 Iron and steel mfg	10	3	30.00	6	60.00	.....	.....	1	10.00
17 Iron and steel products	75	16	21.33	33	44.00	19	25.33	7	9.33
18 Leather goods	22	3	13.63	5	22.72	14	63.63	.....	.....
19 Lead, copper, etc	16	3	18.75	6	37.50	7	43.75	.....	.....
20 Lumber and furniture	44	2	4.54	21	47.72	14	31.81	7	15.90
21 Machinery manufactur'g	41	14	34.14	22	53.65	5	12.19	.....	.....
22 Millinery	7	.....	.....	3	42.85	4	57.14	.....	.....
23 Oils	.....	.....	.....	.....	.....	.....	.....	.....	.....
24 Photo supplies	3	.....	.....	3	100.00	.....	.....	.....	.....
25 Painters, etc	3	.....	.....	3	100.00	.....	.....	.....	.....
26 Paper, etc	17	2	11.76	4	23.52	10	58.82	1	5.88
27 Plumbing, etc	8	2	25.00	6	75.00	.....	.....	.....	.....
28 Printing, etc	81	7	8.64	52	64.19	22	27.16	.....	.....
29 Road material	.....	.....	.....	.....	.....	.....	.....	.....	.....
30 Jute and cordage	1	.....	.....	1	100.00	.....	.....	.....	.....
31 Rubber goods	2	.....	.....	1	50.00	1	50.00	.....	.....
32 Rugs and carpets	2	.....	.....	.....	.....	1	50.00	1	50.00
33 Scientific instruments	13	1	7.69	7	53.84	5	38.46	.....	.....
34 Ship building	1	1	100.00	.....	.....	.....	.....	.....	.....
35 Textiles	15	.....	.....	5	33.33	10	66.66	.....	.....
36 Watches	8	2	25.00	6	75.00	.....	.....	.....	.....
37 Miscellaneous	19	1	5.26	13	68.42	5	26.31	.....	.....
IV. *Transportation*	20	2	10.00	15	75.00	3	15.00	.....	.....
V. *Trade*	520	99	19.03	262	50.38	128	24.61	31	5.96
1 Agencies	27	14	51.85	10	37.03	3	11.11	.....	.....
2 Bankers, etc	14	5	35.71	9	64.28	.....	.....	.....	.....
3 Food	44	3	6.81	21	47.72	17	38.63	3	6.81
4 Clothing, mdse	154	4	2.59	39	25.32	86	55.84	25	16.23
5 Millinery	5	.....	.....	2	40.00	3	60.00	.....	.....
6 Hardware, etc	3	.....	.....	2	66.66	1	33.33	.....	.....
7 Misc. retail stores	56	5	8.92	36	64.28	12	21.42	3	5.35
8 Wholesale dealers	91	25	27.47	62	68.13	4	4.39	.....	.....
9 Office supplies	14	2	14.28	11	78.57	1	7.14	.....	.....
10 Miscellaneous trade	112	41	36.60	70	62.50	1	.89	.....	.....
VI. *Professional Service*	36	22	61.11	14	38.88	.....	.....	.....	.....
VII. *Domestic Service*	196	36	18.36	57	34.18	63	32.14	30	15.30
1 Barbers, etc	8	.....	.....	7	87.50	1	12.50	.....	.....
2 Cleaning and dyeing	37	.....	.....	10	27.02	26	70.27	1	2.70
3 Hotels	71	24	33.80	34	47.88	8	11.26	5	7.04
4 Laundries	28	.....	.....	2	7.14	18	64.28	8	28.57
5 Restaurants	38	1	2.63	12	31.57	9	23.68	16	42.10
6 Others	14	11	78.57	2	14.28	1	7.14	.....	.....
VIII. *Clerical*	.....	.....	.....	.....	.....	.....	.....	.....	.....
IX. *Public Service*	2	.....	.....	2	100.00	.....	.....	.....	.....

INTERPRETATION OF TABLES 3A AND 3B.

These tables bring out the great discrepancy between Chicago and Illinois outside of Chicago in the matter of working hours, and account for the greater proportion of complaints made by "down State" employes interviewed by survey field workers (see Chapter IV).

Nearly one-fourth of all firms outside of Chicago work 10 hours per day as compared to about 6% of Chicago firms.

Even outside of Chicago, however, nearly one-third of all firms have a working day under 9 hours in length.

Chicago industries where long hour days were worked in 1913 were clothing, shoes, paper boxes, cigars, candy and food products. In each of these industries the hours at present in use are much shorter.

TABLE 4A—EMPLOYES CLASSIFIED ACCORDING TO HOURS PER DAY. ILLINOIS OUTSIDE CHICAGO.

	Number employes.	Under 8 hours.		8 and under 9 hours.		9 and under 10 hours.		10 hours.	
		Number.	per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	17,777	590	3.32	5,027	28.28	6,694	37.66	5,460	30.72
1. *Agriculture, Etc.*	.....	.....	.....	.....	.....	.....	.....	.....	.....
II. *Mines and Mining*	.....	.....	.....	.....	.....	.....	.....	.....	.....
III. *Manufacturing and Mechanical*	13,411	300	2.23	3,630	27.06	4,597	34.27	4,884	36.41
1 Autos	53	2	3.77	26	49.05	23	43.39	2	3.77
2 Bakers	57	1	1.75	9	15.78	24	42.10	23	40.35
3 Breweries	.....	.....	.....	.....	.....	.....	.....	.....	.....
4 Building and construction	.....	.....	.....	.....	.....	.....	.....	.....	.....
5 Canning	2,087	154	7.37	138	6.61	285	13.65	1,510	72.35
6 Canvas and felt	50	.....	.....	8	16.00	42	84.00	.....	.....
7 Chemical industries	38	.....	.....	10	26.31	20	52.62	8	21.05
8 Cigars and tobacco	71	3	4.22	27	38.02	41	57.74	.....	.....
9 Clay, glass, etc	.....	.....	.....	.....	.....	.....	.....	.....	.....
10 Clothing	4,533	18	.39	801	17.67	2,392	52.76	1,322	29.16
13 Confectionery	183	.....	.....	66	36.06	88	48.08	29	15.84
14 Electric machinery, etc	118	.....	.....	3	2.54	95	80.50	20	16.94
15 Food products	852	12	1.40	66	7.74	176	20.65	598	70.18
16 Iron and steel manuf'g	189	52	27.51	79	41.79	57	30.15	1	.52
17 Iron and steel products	921	5	.54	143	15.52	400	43.43	373	40.49
18 Leather goods, etc	26	2	7.69	.....	.....	16	61.53	8	30.56
19 Lead, copper, etc	13	.....	.....	2	15.38	6	46.15	5	38.46
20 Lumber and furniture	302	29	9.60	46	15.23	74	24.50	153	50.66
21 Machinery manufactur'g	655	.....	.....	75	11.45	138	21.06	442	67.48
23 Oils	.....	.....	.....	.....	.....	.....	.....	.....	.....
25 Painters and decorators	4	.....	.....	4	100.	.....	.....	.....	.....
26 Paper and wood pulp	96	.....	.....	9	9.37	24	25.00	63	65.62
27 Plumbing and heating	2	.....	.....	1	50.	1	50.00	.....	.....
28 Printing and publishing	569	2	.35	168	29.52	265	46.57	134	23.55
29 Road materials	.....	.....	.....	.....	.....	.....	.....	.....	.....
30 Rope, cordage, etc	99	.....	.....	1	1.01	.....	.....	98	98.98
31 Rubber goods	.....	.....	.....	.....	.....	.....	.....	.....	.....
32 Rugs and carpets	.....	.....	.....	.....	.....	.....	.....	.....	.....
33 Scientific instruments	19	.....	.....	.....	.....	.....	.....	19	100.
35 Textiles	346	20	5.78	54	15.60	196	56.64	76	21.96
36 Watches, etc	2,025	.....	.....	1,841	90.91	184	9.08	.....	.....
37 Miscellaneous	103	.....	.....	53	51.45	50	48.54	.....	.....
IV. *Transportation*	706	180	25.49	321	45.46	140	19.83	65	9.20
V. *Trade*	2,855	35	1.22	983	34.43	1,676	58.70	161	5.63
1 Agencies	13	.....	.....	13	100.	.....	.....	.....	.....
2 Bankers, brokers	17	1	5.88	16	94.11	.....	.....	.....	.....
3 Food stores	88	11	12.50	19	21.59	48	54.54	10	11.36
4 Clothing manufacturing	2,511	14	.55	864	34.40	1,490	59.33	143	5.69
5 Millinery	83	3	3.61	21	25.30	58	69.87	1	1.20
6 Hardware	5	2	40.	1	20.	2	40.	.....	.....
7 Misc. retail stores	74	4	5.40	25	33.78	38	51.35	7	9.46
8 Wholesale dealers	25	.....	.....	20	80.	5	20.	.....	.....
10 Miscellaneous trade	39	.....	.....	4	10.25	35	89.74	.....	.....
11 Public Utilities	.....	.....	.....	.....	.....	.....	.....	.....	.....
VI. *Professional Service*	.....	.....	.....	.....	.....	.....	.....	.....	.....
VII. *Domestic Service*	799	75	9.38	93	11.63	281	35.16	350	43.80
1 Barbers, etc	1	.....	.....	.....	.....	1	100.	.....	.....
2 Cleaning and dyeing	.....	.....	.....	.....	.....	.....	.....	.....	.....
3 Hotels	203	32	15.76	47	23.14	56	27.58	68	33.49
4 Laundries	436	9	2.06	33	7.56	187	42.88	207	47.47
5 Restaurants	130	5	3.84	13	10.	37	28.46	75	57.69
6 Other	29	29	100.	.....	.....	.....	.....	.....	.....
VIII. *Clerical*	.....	.....	.....	.....	.....	.....	.....	.....	.....
IX. *Public Service*	.....	.....	.....	.....	.....	.....	.....	.....	.....

TABLE 4B—EMPLOYES CLASSIFIED ACCORDING TO HOURS PER DAY, CHICAGO.

	Number employes.	Under 8 hours.		8 and under 9 hours.		9 and under 10 hours.		10 hours.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	85,348	9,451	11.07	50,986	59.73	18,799	22.02	6,112	7.16
I. *Agriculture*	.....	.....	.....	.....	.....	.....	.....	.....	.....
III. *Manufacturing and Mechanical*	41,254	1,873	4.54	18,185	44.08	15,888	38.51	5,308	12.86
1 Autos	1,102	33	2.99	949	86.11	120	10.88	.....	.....
2 Bakers	665	16	2.40	630	94.74	11	1.65	8	1.20
3 Breweries	45	.....	.....	39	86.66	6	13.33	.....	.....
4 Bldg. and construction	26	14	53.84	9	34.61	3	11.53	.....	.....
5 Canning	.....	.....	.....	.....	.....	.....	.....	.....	.....
6 Canvas and felt	877	9	1.02	277	31.58	521	59.40	70	7.98
7 Chemicals	1,660	114	6.86	1,218	73.37	224	13.49	104	6.26
8 Cigars, etc	499	2	.40	86	17.23	409	81.96	2	.40
9 Clay, glass, etc	659	14	2.12	287	43.55	343	52.04	15	2.27
10 Clothing	9,998	82	.81	5,587	55.88	4,270	42.70	59	.59
11 Coal, tar products	871	589	67.62	222	25.48	56	6.42	4	.45
12 Coke	.....	.....	.....	.....	.....	.....	.....	.....	.....
13 Confectionery	2,214	68	3.07	483	21.81	1,661	75.02	2	.09
14 Electric machinery, etc	2,122	10	.47	1,127	53.11	982	46.27	3	.14
15 Food products	7,836	80	1.02	2,989	38.14	389	4.96	4,378	55.87
16 Iron and steel mfg	117	32	27.35	18	15.38	.....	.....	67	57.26
17 Iron and steel products	2,943	80	2.70	488	16.58	2,016	68.50	359	12.19
18 Leather goods	299	7	2.34	68	22.74	224	74.91	.....	.....
19 Lead, copper, etc	720	38	5.27	35	4.86	647	89.86	.....	.....
20 Lumber and furniture	693	18	2.59	275	39.68	184	25.56	216	31.16
21 Machine manufacture	118	297	26.57	587	50.71	243	21.73	11	.98
22 Millinery	183	3	1.63	70	38.25	110	60.10	.....	.....
23 Oils	.....	.....	.....	.....	.....	.....	.....	.....	.....
24 Photo supplies	24	.....	.....	24	100.	.....	.....	.....	.....
25 Painters, etc	4	.....	.....	4	100.	.....	.....	.....	.....
26 Paper, etc	418	24	5.74	194	46.41	193	46.17	7	1.67
27 Plumbing	15	3	20.00	12	80.	.....	.....	.....	.....
28 Printing, etc	2,969	47	1.58	1,434	48.29	1,488	50.11	.....	.....
29 Road material	.....	.....	.....	.....	.....	.....	.....	.....	.....
30 Jute and cordage	9	.....	.....	9	100.	.....	.....	.....	.....
31 Rubber goods	34	.....	.....	6	17.64	28	82.35	.....	.....
32 Rugs and carpets	55	.....	.....	.....	.....	52	94.54	3	5.45
33 Scientific instruments	1,334	41	3.07	260	19.49	1,033	77.43	.....	.....
34 Ship building	17	12	70.58	5	29.41	.....	.....	.....	.....
35 Textiles	1,338	226	16.89	602	44.99	510	38.11	.....	.....
36 Watches and clocks	61	8	13.11	52	85.24	1	1.63	.....	.....
37 Miscellaneous	329	6	1.82	159	48.32	164	49.84	.....	.....
IV. *Transportation*	11,059	4,663	42.16	6,287	56.84	95	.85	14	.12
V. *Trade*	29,317	2,264	7.72	25,423	86.71	1,368	4,66	262	.89
1 Agencies	437	310	70.93	105	24.02	22	5.03	.....	.....
2 Bankers, etc	836	49	5.86	787	94.13	.....	.....	.....	.....
3 Food	279	69	21.86	53	18.99	99	35.48	66	23.65
4 Clothing and mdse	23,646	1,380	5.83	20,963	88.65	1,124	4.75	179	.75
5 Millinery	17	.....	.....	9	52.94	8	47.05	.....	.....
6 Hardware	22	.....	.....	21	95.45	1	4.54	.....	.....
7 Misc. retail stores	472	33	6.99	384	81.35	39	8.26	16	3.38
8 Wholesale dealers	2,541	166	6.53	2,315	91.10	59	2.32	1	.03
9 Office supplies	78	4	5.12	60	76.92	14	17.94	.....	.....
10 Miscellaneous trade	989	261	26.39	726	73.40	2	.20	.....	.....
VI. *Professional Service*	189	110	58.20	79	41.79	.....	.....	.....	.....
VII. *Domestic Service*	3,513	341	15.39	996	28.35	1,448	41.21	528	15.02
1 Barbers, etc	49	.....	.....	48	97.95	1	2.04	.....	.....
2 Cleaning, etc	321	.....	.....	44	13.70	271	84.42	6	1.86
3 Hotels	1,093	165	15.09	653	59.74	247	22.59	28	2.56
4 Laundries	1,116	7	.62	116	10.39	838	75.09	155	13.88
5 Restaurants	606	171	28.21	105	17.32	79	13.03	251	41.41
6 Other	328	198	60.36	30	9.14	12	3.66	88	26.82
VIII. *Clerical*	.....	.....	.....	.....	.....	.....	.....	.....	.....
IX. *Public Service*	16	.....	.....	16	100.	.....	.....	.....	.....

INTERPRETATION OF TABLES 4A AND 4B.

These tables show the same facts as Tables 3A and 3B except that they are divided by employes rather than by establishments. It is noticeable that the Chicago firms having long hours are mainly small firms. 37.1% of firms have a working day of 9 hours or more but only 29.2% of Chicago employes work in such firms.

In Illinois outside of Chicago the proportion of large and small firms in the different hour groups is about equal. Thus 67.4% of firms worked 9 hours or over and 67.4% of employes.

Facts for the different industries show about the same in this table as in tables 3A and 3B.

TABLE 5A—FIRMS CLASSIFIED ACCORDING TO HOURS PER WEEK, ILLINOIS OUTSIDE CHICAGO.

	Number of firms.	Under 43 hours.		43 and under 49.		49 and under 55.		55 and under 61		61 and under.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	790	40	5.06	131	16.58	261	33.03	308	38.98	50	6.32
I. *Agriculture, Etc*											
II. *Mines and Mining*											
III. *Manufacturing and Mechanical*	273	8	2.93	71	26.	84	30.76	102	37.36	8	2.93
1 Autos	16			9	56.25	6	37.50	1	6.25		
2 Bakers	28	1	3.57	2	7.14	6	21.42	15	53.57	4	14.28
3 Breweries											
4 Building and construction											
5 Canning	46	2	4.34	4	8.69	9	19.56	28	60.86	3	6.52
6 Canvas and felt	8			5	62.50	3	37.50				
7 Chemical industry	3			2	66.66	1	33.33				
8 Cigars and tobacco	6	1	16.66	4	66.66	1	16.66				
9 Clay, glass, etc											
10 Clothing	36			10	27.77	16	44.44	10	27.77		
13 Confectionery	5			1	20.	2	40.	2	40.		
14 Electric machines, etc	3					1	33.33	2	66.66		
15 Food products	24			7	29.16	8	33.33	8	33.33	1	4.16
16 Iron and steel mfg	6	1	16.66	4	66.66	1	16.66				
17 Iron and steel products	24			4	16.66	6	25.	4	58.33		
18 Leather goods	2					1	50.00	1	50.00		
19 Lead, copper, etc	3			1	33.33	1	33.33	1	33.33		
20 Lumber and furniture	17	1	5.88	4	23.52	5	29.41	7	41.17		
21 Machine manufacturing	6			1	16.66	2	33.33	3	50.		
23 Oils											
25 Painters and decorators	1			1	100.						
26 Paper and wood pulp	5					2	40.	3	60.		
27 Plumbing and heating	1							1	100.		
28 Printing and publishing	18	2	11.11	9	50.	4	22.22	3	16.66		
29 Road material											
30 Rope and cordage	1							1	100.		
31 Rubber goods											
32 Rugs and carpets											
33 Scientific instruments	1							1	100.		
35 Textiles	3					2	66.66	1	33.33		
36 Watches, etc	2			1	50.	1	50.				
37 Miscellaneous	8			2	25.	6	75.				
IV. *Transportation*	54	5	9.25	13	24.07	17	31.48	14	25.92	5	9.25
V. *Trade*	345	10	2.89	32	9.27	139	40.28	155	44.92	9	2.60
1 Agencies	1			1	100.						
2 Bankers, brokers	2	1	50.	1	50.						
3 Food stores	35	2	5.71	3	8.57	7	20.00	17	48.53	6	17.14
4 Clothing and merchandise	241	5	2.07	17	7.05	97	40.24	120	49.79	2	.82
5 Millinery	21					13	61.90	8	38.09		
6 Hardware	3			1	33.33	1	33.33	1	33.33		
7 Misc. retail stores	29	2	6.82	4	13.64	13	44.82	9	31.03	1	3.41
8 Wholesale dealer	8			3	37.50	5	62.50				
10 Miscellaneous trade	5			2	40.	3	60.				
11 Public utilities											
VI. *Professional Service*											
VII. *Domestic Service*	118	17	14.40	15	12.71	21	17.79	37	31.35	28	23.72
1 Barbers, etc	1			1	100.						
2 Cleaning and dyeing											
3 Hotels	33	5	15.15	4	12.12	4	12.12	12	36.36	8	24.24
4 Laundries	37	3	8.10	6	16 20	14	37.83	14	37.83		
5 Restaurants	36	1	2.77	2	5.54	2	5.54	11	30.55	20	55.55
6 Other	11	8	72.72	2	18.18	1	9.09				
VIII. *Clerical*											
IX. *Public Service*											

TABLE 5B—FIRMS CLASSIFIED ACCORDING TO HOURS PER WEEK, CHICAGO.

	Number firms.	Under 43 hours.		43 and under 49 hrs.		49 and under 55 hrs.		55 and under 61 hours.		61 and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent
TOTAL	1,606	212	13.20	679	42.27	506	31.50	185	11.51	24	1.49
I. *Agriculture*	....	....	.....	....	.....	....	.....	....	.....	....	.....
III. *Manufacturing and Mechanical*	835	82	9.82	378	45.26	314	37.60	60	7.18	1	.11
1 Autos	27	4	14.81	18	66.66	5	18.51	....	.....	....	.....
2 Bakers	17	2	11.76	8	47.05	4	23.52	2	11.76	1	5.88
3 Breweries	7	....	.....	6	85.71	1	14.28	....	.....	....	.....
4 Building and construction	10	2	20.00	8	80.00	....	.....	....	.....	....	.....
5 Canning	....	....	.....	....	.....	....	.....	....	.....	....	.....
6 Canvas and felt	35	1	2.85	13	37.14	19	54.28	2	5.70	....	.....
7 Chemicals	45	5	11.11	24	53.33	15	33.33	1	2.22	....	.....
8 Cigars, etc	14	....	.....	7	50.00	7	50.00	....	.....	....	.....
9 Clay, glass etc	34	6	17.64	19	55.88	8	23.52	1	2.94	....	.....
10 Clothing	110	3	2.72	34	30.90	70	63.63	3	2.72	....	.....
11 Coal tar products	3	1	33.33	1	33.33	1	33.33	....	.....	....	.....
12 Coke	....	....	.....	....	.....	....	.....	....	.....	....	.....
13 Confectionery	43	2	4.65	5	11.62	26	60.46	10	23.25	....	.....
14 Electric machinery, etc	38	3	7.89	18	47.38	16	42.10	1	2.63	....	.....
15 Food products	65	2	3.07	32	49.23	15	23.07	16	24.61	....	.....
16 Iron and steel mfg	10	3	30.00	6	60.00	....	.....	1	10.00	....	.....
17 Iron and steel products	75	14	18.66	34	45.33	19	25.33	8	10.66	....	.....
18 Leather goods	22	3	13.63	4	18.18	14	63.63	1	4.54	....	.....
19 Lead, copper, etc	16	3	18.75	5	31.25	8	50.00	....	.....	....	.....
20 Lumber and furniture	44	2	4.54	21	47.72	12	27.27	9	20.45	....	.....
21 Machinery manufactur'g	41	11	28.62	25	60.97	5	12.19	....	.....	....	.....
22 Millinery	7	....	.....	1	14.28	6	85.71	....	.....	....	.....
23 Oils	....	....	.....	....	.....	....	.....	....	.....	....	.....
24 Photo supplies	3	....	.....	3	100.00	....	.....	....	.....	....	.....
25 Painters, etc	3	....	.....	3	100.00	....	.....	....	.....	....	.....
26 Paper, etc	17	2	11.76	3	17.64	10	58.82	2	11.76	....	.....
27 Plumbing, etc	8	1	12.50	7	87.50	....	.....	....	.....	....	.....
28 Printing, etc	81	7	8.64	48	59.25	26	32.09	....	.....	....	.....
29 Road material	....	....	.....	....	.....	....	.....	....	.....	....	.....
30 Jute and cordage	1	....	.....	1	100.00	....	.....	....	.....	....	.....
31 Rubber goods	2	....	.....	1	50.00	....	.....	1	50.00	....	.....
32 Rugs and carpets	2	....	.....	....	.....	1	50.00	1	50.00	....	.....
33 Scientific instruments	13	1	7.69	5	38.46	7	53.84	....	.....	....	.....
34 Ship building	1	1	100.00	....	.....	....	.....	....	.....	....	.....
35 Textiles	15	....	.....	3	20.00	11	73.33	1	6.66	....	.....
36 Watches, etc	7	2	28.57	5	71.42	....	.....	....	.....	....	.....
37 Miscellaneous	19	1	5.26	10	52.63	8	42.10	....	.....	....	.....
IV. *Transportation*	20	....	.....	14	70.00	2	10.00	4	20.00	....	.....
V. *Trade*	520	88	16.92	228	43.84	122	23.46	81	15.57	1	.19
1 Agencies	27	11	40.74	13	48.14	3	11.11	....	.....	....	.....
2 Bankers, etc	14	4	28.57	10	71.42	....	.....	....	.....	....	.....
3 Food	44	3	6.81	7	15.90	18	40.90	16	36.36	....	.....
4 Clothing and merchandise	154	5	3.24	26	16.88	69	44.80	54	35.06	....	.....
5 Millinery	5	....	.....	2	40.00	3	60.00	....	.....	....	.....
6 Hardware, etc	3	....	.....	1	33.33	1	33.33	1	33.33	....	.....
7 Misc. retail stores	56	4	7.14	26	46.42	17	30.35	8	14.28	1	1.78
8 Wholesale dealers	91	20	21.97	63	69.23	6	6.59	2	2.19	....	.....
9 Office supplies	14	3	21.42	10	71.42	1	7.14	....	.....	....	.....
10 Miscellaneous trade	112	38	33.92	70	62.50	4	3.57	....	.....	....	.....
VI. *Professional Service*	36	20	55.55	15	41.66	1	2.77	....	.....	....	.....
VII. *Domestic Service*	193	22	11.39	42	21.76	67	34.71	40	20.72	22	11.39
1 Barbers, etc	8	....	.....	4	50.00	3	37.50	....	.....	1	12.50
2 Cleaning and dyeing	37	1	2.70	7	18.91	27	72.97	2	5.40	....	.....
3 Hotels	68	11	16.17	10	14.70	19	27.94	20	29.40	8	11.76
4 Laundries	28	....	.....	9	32.14	10	35.71	9	32.14	....	.....
5 Restaurants	38	1	2.63	8	21.05	8	21.05	8	21.05	13	34.21
6 Others	14	9	64.28	4	28.57	....	.....	1	7.14	....	.....
VIII. *Clerical*	.....	....	.....	....	.....	....	.....	....	.....	....	.....
IX. *Public Service*	2	....	.....	2	100.00	....	.....	....	.....	....	.....

INTERPRETATION OF TABLES 5A AND 5B.

Hours per week show about the same conditions as hours per day, except that the presence of seven day industries, such as restaurants, hotels and some dry goods stores, makes the long week slightly more common than the long day.

For example, while 32.6% of firms outside of Chicago have a working day under 9 hours only 21.6% of firms have a week of 48 hours or less. The same general proportion holds good for Chicago firms.

TABLE 6A—EMPLOYES CLASSIFIED ACCORDING TO HOURS PER WEEK, ILLINOIS OUTSIDE CHICAGO.

	Number employes.	Under 43 hours.		43 and under 49 hours.		49 and under 55 hours.		55 and under 61 hours.		61 and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	17,469	223	1.27	4,174	23.89	6,326	36.21	6,180	35.60	566	3.24
I. *Agriculture, etc*	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
II. *Mines and Mining*	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
III. *Manufacturing and Mechanical*	13,411	76	.56	3,751	27.96	4,665	34.78	4,545	33.89	374	2.78
1 Autos	53	....	.....	28	52.82	23	43.39	2	3.77	....	.....
2 Bakers	57	1	1.75	3	5.26	12	21.05	33	57.89	8	14.03
3 Breweries	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
4 Building and const'n	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
5 Canning	2,087	9	43	240	11.49	424	20.31	1,173	56.20	241	11.54
6 Canvas and felt	50	....	.....	7	14.	43	86.	.....	.....	....	.....
7 Chemical industry	38	....	.....	10	26.31	20	52.63	8	21.05	....	.....
8 Cigars and tobacco	71	3	4.22	41	57.74	27	38.02	.....	.....	....	.....
9 Clay, glass, etc	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
10 Clothing	4,533	3	.06	804	17.78	2,396	52.85	1,330	29.33	....	.....
13 Confectionery	183	....	.....	8	4.37	143	78.14	32	17.48	....	.....
14 Electric machinery, etc.	118	....	.....	3	2.54	46	38.98	69	58.47	....	.....
15 Food products	852	1	.11	75	8.80	168	19.71	503	59.03	105	12.32
16 Iron and steel manuf'g.	189	5	2.64	119	62.96	65	34.39	.....	.....	....	.....
17 Iron and steel products.	921	....	.....	175	19.	367	39.84	359	38.97	20	2.17
18 Leather goods, etc	26	2	7.69	.....	.....	14	53.84	10	38.46	....	.....
19 Lead, copper, etc	13	....	.....	2	15.38	6	46.15	5	38.46	....	.....
20 Lumber and furniture.	302	29	9.60	43	14.23	53	17.54	177	58.60	....	.....
21 Machinery manuf'g	655	....	.....	75	11.45	138	21.06	442	67.48	....	.....
23 Oils	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
25 Painting and decorating	4	....	.....	4	100.	.....	.....	.....	.....	....	.....
26 Paper and wood pulp	96	....	.....	9	9.37	13	13.54	74	77.08	....	.....
27 Plumbing and heating	2	1	50.	.....	.....	.....	.....	1	50.	....	.....
28 Printing and publishing	569	2	.35	168	29.52	265	46.57	134	23.55	....	.....
29 Road materials	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
30 Rope and cordage	99	....	.....	1	1.01	.....	.....	98	98.98	....	.....
31 Rubber goods	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
32 Rugs and carpets	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
33 Scientific instruments	19	....	.....	.....	.....	.....	.....	19	100.	....	.....
35 Textiles	346	20	5.78	54	15.60	196	56.64	76	21.96	....	.....
36 Watches, etc	2,025	....	.....	1,841	90.91	184	9.08	.....	.....	....	.....
37 Miscellaneous	103	....	.....	41	39.80	62	60.19	.....	.....	....	.....
IV. *Transportation*	404	60	14.85	47	11.63	83	20.54	163	40.34	51	12.62
V. *Trade*	2,855	15	.52	283	9.91	1,357	47.53	1,176	41.19	24	.84
1 Agencies	13	....	.....	13	100.	.....	.....	.....	.....	....	.....
2 Bankers and brokers	17	1	5.88	16	94.11	.....	.....	.....	.....	....	.....
3 Food stores	88	3	3.40	3	3.40	17	19.31	52	59.09	13	14.77
4 Clothing manufacturing	2,511	6	.23	223	8.88	1,205	47.98	1,067	42.49	10	.39
5 Millinery	83	1	1.20	2	2.40	43	51.80	37	44.57	....	.....
6 Hardware	5	....	.....	1	20.	2	10.	2	40.	....	.....
7 Misc. retail stores	74	4	5.40	7	9.45	44	50.45	18	24.32	1	1.35
8 Wholesale dealers	25	....	.....	14	56.	11	44.	.....	.....	....	.....
10 Miscellaneous trade	39	....	.....	4	10.25	35	89.74	.....	.....	....	.....
11 Public utilities	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
VI. *Professional Service*	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
VII. *Domestic Service, etc*	799	72	9.01	93	11.63	221	27.65	296	37.04	117	14.64
1 Barbers, etc	1	....	.....	1	100.	.....	.....	.....	.....	....	.....
2 Cleaning and dyeing	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
3 Hotels	203	37	18.22	36	17.73	62	30.54	39	19.21	29	14.28
4 Laundries	436	12	2.75	39	8.94	151	34.63	234	53.66	....	.....
5 Restaurants	130	8	6.15	10	7.69	1	.76	23	17.69	88	67.69
6 Other	29	15	51.72	7	24.13	7	24.13	.....	.....	....	.....
VIII. *Clerical*	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....
IX. *Public Service*	.....	....	.....	.....	.....	.....	.....	.....	.....	....	.....

TABLE 6B—EMPLOYES CLASSIFIED ACCORDING TO HOURS PER WEEK—CHICAGO

	Number employes.	Under 43 hours.		43 and under 49 hours.		49 and under 55 hours.		55 and under 61 hours.		61 and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	85,219	8,004	9.39	48,020	57.53	21,183	24.97	7,639	8.96	373	.45
I. *Agriculture*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
III. *Manufacturing and Mechanical*	41,202	1,138	2.76	17,847	43.31	16,306	39.57	5,841	14.17	70	.16
1 Autos	1,102	9	.81	973	88.29	120	10.88	.....	.....	.....	.....
2 Bakers	665	23	3.45	624	93.83	8	1.20	9	1.35	1	.15
3 Breweries	45	.....	.....	41	91.11	4	8.88	.....	.....	.....	.....
4 Bldg. and construction	26	14	53.84	9	34.61	3	11.53	.....	.....	.....	.....
5 Canning	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
6 Canvas and felt	877	9	1.02	278	31.69	520	59.29	70	7.98	.....	.....
7 Chemicals	1,660	19	1.14	1,050	63.25	481	28.97	110	6.62	.....	.....
8 Cigars, etc	499	2	.40	63	12.62	432	86.57	2	.40	.....	.....
9 Clay, Glass, etc	659	12	1.82	295	44.76	337	51.13	15	2.27	.....	.....
10 Clothing	9,998	28	.28	5,269	52.70	4,691	46.92	10	.10	.....	.....
11 Coal, tar products	871	589	67.62	222	25.49	56	6.42	4	.45	.....	.....
12 Coke	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13 Confectionery	2,170	66	3.04	286	13.17	1,288	59.35	528	24.33	2	.09
14 Electric machinery,etc	2,122	9	.42	1,125	53.01	985	46.42	3	.14	.....	.....
15 Food products	7,836	32	.40	2,989	38.14	426	5.42	4,389	56.01	.....	.....
16 Iron and steel Mfg	117	32	27.35	18	15.38	.....	.....	.....	.....	67	57.26
17 Iron and steel products	2,943	61	2.07	505	17.15	2,004	68.09	373	12.67	.....	.....
18 Leather goods	299	5	1.67	68	22.74	221	73.91	5	1.67	.....	.....
19 Lead, copper, etc	720	38	5.27	18	2.50	664	92.22	.....	.....	.....	.....
20 Lumber and furniture	693	15	2.16	273	39.39	159	22.94	246	35.49	.....	.....
21 Machinery mfg	1,118	92	8.22	776	69.40	239	21.37	11	.98	.....	.....
22 Millinery	183	1	.54	30	16.39	152	83.06	.....	.....	.....	.....
23 Oils	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
24 Photo supplies	24	.....	.....	24	100.	.....	.....	.....	.....	.....	.....
25 Painters, etc	4	.....	.....	4	100.	.....	.....	.....	.....	.....	.....
26 Paper, etc	418	13	3.11	178	42.58	212	50.71	15	3.58	.....	.....
27 Plumbing, etc	15	1	6.66	14	93.33	.....	.....	.....	.....	.....	.....
28 Printing, etc	2,969	46	1.54	1,519	51.15	1,404	47.29	.....	.....	.....	.....
29 Road materials	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
30 Jute and cordage	9	.....	.....	9	100.	.....	.....	.....	.....	.....	.....
31 Rubber goods	34	.....	.....	6	17.64	.....	.....	28	82.35	.....	.....
32 Rugs and carpets	55	.....	.....	.....	.....	52	94.54	3	5.45	.....	.....
33 Scientific instruments	1,334	2	.14	241	18.06	1,091	81.78	.....	.....	.....	.....
34 Ship building	17	12	70.58	.....	.....	5	29.41	.....	.....	.....	.....
35 Textiles	1,338	.....	.....	756	56.50	562	42.00	20	1.49	.....	.....
36 Watches, etc	53	7	13.20	46	86.79	.....	.....	.....	.....	.....	.....
37 Miscellaneous	329	1	.30	138	41.94	190	57.75	.....	.....	.....	.....
IV. *Transportation*	11,059	4,659	42.12	6,278	56.76	101	.91	7	.06	14	.12
V. *Trade*	29,317	1,849	6.30	23,059	78.65	3,926	13.39	474	1.61	9	.03
1 Agencies	437	53	12.13	357	81.69	27	6.17	.....	.....	.....	.....
2 Bankers	836	48	5.74	788	94.25	.....	.....	.....	.....	.....	.....
3 Food	279	70	25.08	48	17.20	75	26.88	86	30.82	.....	.....
4 Clothing and mdse	23,646	1,387	5.86	18,754	79.31	3,165	13.38	340	1.43	.....	.....
5 Millinery	17	.....	.....	3	17.64	14	82.35	.....	.....	.....	.....
6 Hardware	22	.....	.....	20	90.90	1	4.54	1	4.54	.....	.....
7 Misc. retail stores	472	26	5.50	282	59.74	127	26.90	28	5.93	9	1.90
8 Wholesale dealers	2,541	63	2.47	1,986	78.15	473	18.61	19	.74	.....	.....
9 Office supplies	78	12	15.38	52	66.66	14	17.94	.....	.....	.....	.....
10 Miscellanous trade	989	190	19.21	769	77.75	30	3.03	.....	.....	.....	.....
VI. *Professional Service*	189	73	38.62	92	48.67	24	12.69	.....	.....	.....	.....
VII. *Domestic Service*	3,436	285	8.29	728	21.18	826	24.03	1,317	38.32	280	8.14
1 Barbers, etc	49	.....	.....	25	51.02	23	46.93	.....	.....	1	2.04
2 Cleaners, dyeing	321	2	.62	29	9.03	242	75.38	48	14.95	.....	.....
3 Hotels	1,016	27	2.65	270	26.57	207	20.37	466	45.86	46	4.52
4 Laundries	1,116	7	.62	207	18.54	282	25.26	620	55.55	.....	.....
5 Restaurants	606	41	6.76	169	27.88	68	11.22	95	15.67	233	38.44
6 Other	328	208	63.41	28	8.53	4	1.21	88	26.82	.....	.....
VIII. *Clerical*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
IX. *Public Service*	16	.....	.....	16	100.	.....	.....	.....	.....	.....	.....

INTERPRETATION OF TABLES 6A AND 6B.

An analysis of the number of employes in various hour groups on the basis of the working week shows about the same facts as the analysis of firms. About 67% of Chicago employes and 25% of Illinois outside of Chicago employes are at present working a week of 48 hours or fewer.

This means that a majority of all employes in the State are at present working the short day and week.

CHAPTER III.

STATEMENTS OF INDUSTRIAL PHYSICIANS.

Facts and opinions were requested from a selected group of physicians of wide experience in industrial work. It was felt that the testimony of these men and women, although in most cases not backed by actual statistical data, would constitute a body of authoritative opinion concerning working hours.

Owing to the unusual conditions now prevailing, a large number of industrial physicians from whom information was requested were found to be in Government service, or for other reasons were unable to make report. Forty-one replies were received and analyzed. This group included physicians doing types of work as follows:

	Number of physicians.	Number women in charge.
Packing industry	2	3,225
Department stores	4	3,740
Mail order houses	3	18,518
Telephone company	1	Number not given.
Insurance physicians. Government employes. or doctors doing work for several firms	9	Exact number not obtainable.
Railroads and other industries employing women in offices only	8	1,870
Machine shops (heavy labor)	7	1,504
Miscellaneous manufactories (medium or light labor)	7	3,093
Total	41	31,950

The group of physicians replying will be seen to be fairly representative of the industries employing women to the greatest extent. It may also be taken as representative of Illinois localities, as 9 of the 41 physicians were working in firms outside of Chicago, 30 within Chicago, and 2 were State employes, doing work throughout the State

The average length of industrial experience of physicians replying to the questionnaire was about ten years. The average number of women cared for by physicians working in individual shops was 1,031.

In general, replies to the physician's questionnaire indicate that the consensus of opinion of this group of men is as follows:

1. In the interest of health, eight hours is the best working day length, and 44 or 45 hours the best week for women in industry.
2. The maximum may be placed slightly higher than this.
3. Most or all of the illnesses to which workers are subject may be traceable to long hours, as these exert a general deteriorative effect.

4. There is a definite effect of long hours on health and a beneficial effect observed where hours have been shortened.
5. The long day has some effect on the maternal functions, particularly in certain types of occupation.
6. Long hours tend to increase the number of industrial accidents, although a distribution of these through the day shows no clear connection with increased fatigue.

A striking unanimity of opinion was found in the answers to the question: "What, in your opinion, is the best length for the working day and week for women in industry?" Of 35 physicians replying to this question,

26 said	8 hours.	1 said	6 hours.
1 said	8 hours to 10	1 said	9 hours.
1 said	7½ hours to 9	1 said	10 hours.
1 said	7½ hours.	2 said	They did not know.
1 said	7 hours.		

Reasons given for these opinions were:

"The average woman can't do more."

"Women need plenty of time for rest and recreation."

"These hours allow needed time for proper feeding and recreation."

"These hours leave sufficient time for necessary duties outside the shop or office."

"These are safe limits."

"These hours make for better health."

A number of physicians gave as their reason for advocating the eight-hour day that it makes for a more efficient working force, and so favors both employer and employe. The physician (supervising a department store) giving eight to ten hours as the best length for the working day stated that longer hours were possible for the girls under his supervision because the work in that store was easy and the conditions good, but that his reply referred to his own industry alone. One physician advocating the eight-hour day stated that hours should be fewer than eight for workers in "hazardous" or "nervous" occupations. A few other statements in answer to this question may be quoted here:

1. (Advocates 8-hour day, 45-hour week.) "Women have time to relax and organs have a chance to recuperate and rest. Workers enjoy the outdoors, parks and theatres. These hours induce to cleanliness."
2. (Advocates 8-hour day.) "Because I am firmly convinced that short working days, seriously entered upon, will accomplish all that the industrial world ordinarily requires, and will leave the individual a free eight hours for education and intellectual pursuits, and will make for a better type of individual."
3. (Advocates 7 hours.) "A longer lunch hour, more recreation and a short rest in the morning and afternoon will tend to better health and result in a more efficient working force."

4. (Advocates 8 hours.) "Help to more production and better work, conserve health."
5. (Advocates 8 hours.) "Fatigue lessens efficiency; longer hours leaving little leisure."
6. The physician advocating 10 hours gave no reason.

Only 10 physicians mentioned the best week length. Of these, 9 favored 48 hours or less, as follows:

4 said	44 hours to 45	1 said	42 hours.
3 said	48 hours.	1 said	40 hours.

It is evident, therefore, that a preponderance of opinion among these doctors favors the 8-hour day as the best working length for women in industry. This day means probably a 44 to a 45-hour working week.

That these replies were not influenced by the fact that the doctors replying were working in 8-hour shops is shown by the following classification of replies of 31 physicians, each doing work for only one firm. The hours in the shops under their medical direction were as follows:

5 firms have a 10 hour day.	4 firms have an 8½ or 8¾ hour day.
7 firms have a 9 hour day.	15 firms have an 8 hour day.

Eleven of these firms have reduced their hours of work for women within the past five years. Undoubtedly this fact shows the influence of the presence of industrial physicians. Nine of these 11 physicians advocate 8 hours as the best working day; one, 8 to 10, and one did not answer. Of the eight giving their opinion on the maximum length, five advocate 8 hours, one 9 hours, and two 10 hours.

Another question asked: "Should there be a maximum working day length, and if so, what?" Thirty-two physicians replied to this question. Of these,

17 advocate 8 hours as the maximum;
9 are contented with a 10-hour maximum;
3 advocate 9 hours as the maximum;
1 advocates 6 to 7 hours as the maximum;
1 does not know;
1 advocates no maximum regulation.

Comments and qualifications to these replies were as follows:

"Allow 10 hours per day for one week in emergency."
"This limit (of 8 hours) applies to department stores only."
"No limit, but extra pay for overtime work."
"Eight hours per day and cut out overtime and night work for women."
"This limit (10 hours) to be used for emergency only."

CHANGING CONDITIONS.

That the hours have been changed in a number of firms in which industrial physicians are working may be due in part to the influence of the medical department and in part to the general movement toward introduction of shorter hours. One question in the physician's questionnaire asks what conditions other than hours have changed during

the past five years so as to affect the health of women employes in the particular firm. Twenty-nine physicians answered this question. Ten said that they knew of no such changes, and six that they did not know what changes had taken place or were not in a position to report on such changes. The following changes were reported in the 13 affirmative replies to this question:

	Number mentioning change.		Number mentioning change.
Rest rooms	10	General improvement in conditions	5
Libraries	2	Cafeteria or restaurant	3
Recreation facilities	3	Increase in wages	1
Increased medical supervision	8	Less Sunday work	1
Better ventilation	4	No overtime or night work	1
Better sanitary conditions	4	New plant and improved machinery	1
Rest periods	2		

Fourteen physicians reported that all women applicants for work are given physical examinations before being accepted. Six reported a partial examination, "not unless an unusual condition exists," "only for those entering hazardous occupations," "a partial examination by questions," "in some of the firms I supervise."

Two questions requested information on illnesses traceable most directly to any effect of long hours on the health of working women and for the illnesses most prevalent among the women under the physician's supervision. Replies were as follows:

	Reported traceable to hours.	Reported as prevalent.
Nervous, neurasthenic, etc	6	7
Gynecological diseases, menstrual, etc	6	9
Occupational diseases such as tuberculosis, varicose veins, etc	4	2
Ordinary complaints—colds, indigestion, rheumatism, etc	1	4
Nose and throat disorders	1	7
Susceptibility to the communicable diseases	1	.....
Anemia	2	.....
Physical and mental exhaustion	2	2
Backache	2	2
Nutritional disorders	.....	2
Constipation	2	4
Goiter	.....	1
Minor accidents	1	3
Teeth diseases	.....	1
None are traceable	10	.....
No particular illness are most prevalent	.....	4
Few illnesses of any sort are found	.....	1

In few cases did a physician report the same diseases as being traceable to long hours and as being usual with the firms with which he was connected.

Replies to this question show a striking lack of unanimity among industrial physicians themselves, as to what specific illnesses may be caused by long hours.

In this connection it is interesting to note the opinion on diseases traceable to length of hours found in "Use of Factory Statistics in the Investigation of Industrial Fatigue," by Philip Sargant Florence (Page 76).

"Whether it (fatigue) promotes certain types of disease more strongly than others, remains still a matter of conjecture among physicians. Prob-

ably functional nervous disorders and possibly the so-called degenerative diseases attacking the circulatory, urinary and nervous systems are more likely to run a parallel course with diminshed working capacity than are other human maladies. It is, of course, untrue to say that contagious diseases can be caused primarily by long or intense activity, but that even here it is one of the predisposing causes is now generally recognized."

Probably the lack of unanimity in the physicians' replies is indicative of the fact that a bad effect of long hours on health may be shown by any one of a number of ailments.

EFFECT OF LONG HOURS.

Inquiry was made to find out what bad effects of long hours had been observed by physicians, or what good effects had followed a reduction in hours. Six physicians did not answer this question. Eleven replied that hours have not been changed in the firm in which they worked or that they have no statistical data on the subject. Nine replied that they had noticed no effect on health of small changes in hours such as had taken place within their term of experience. From the remaining 14, the following comments and observations were received:

"The shorter day is more economical for employer and employee." (1 reply.)
"No bad conditions in hours have ever been noticed." (7 replies.)
"Standing is hard on women workers." (1 reply.)
"If workers will obey the laws of health, hours will make little difference." (2 replies.)
"Effect of hours depends upon the nature of the work." (1 reply.)
"Long hours are injurious to health." (1 reply.)
"Short hours promote health and well being." (1 reply.)
"Long hours predispose workers to acute infections." (1 reply.)

Four replies describing specific experience with long and short hours deserve quotation in full.

1. "I remember several years ago when the factory ran on 5 to 6 hours a day for several months. Most of the girls looked in much better condition."
2. "Where women still worked 10 hours a day I found it necessary to give vacations and make other changes because of general poor physical conditions."
3. "When the piece worker works 8 hours per day instead of 10 hours her average per hour increases but the total for the 8 hours does not equal the total for 10 hours." (This opinion is somewhat at variance with survey findings. See Special Study Reports.)
4. "During the Christmas rush when certain departments were forced to work overtime, and even on Sundays, the acute sicknesses among the girls increased to a large extent, that is, the condition that made them remain home for one or two days on account of sickness. In some departments, not affected by the Christmas rush, it was not necessary to work overtime or on Sundays, and the girls in these departments did not suffer with these acute sicknesses at the rate of the other departments."

One physician was strongly of the opinion that the method of living of the employe rather than the length of the hours or the nature of the work was at the basis of health. He says:

"In order that the health and strength of the workers, both men and women, may be conserved, the employer must demand from his employes a better method of living which shall be simple in itself. This method of living means more rest than is now taken,

more attention given to eating, the quality of the food taken, and the matter of dress. It is the height of absurdity to see girls come to work, as they do now, with few clothes, not enough in cold weather to keep them warm, and shoes that are fit for the dance hall only, and expect to stand it without a break.

"You asked one question which I can answer fairly well, has the length of the working day any effect on the maternal functions of the workers? It has if these workers are foolish enough to break all the laws of health which they now do, by being improperly clothed, fed and rested, with practically no exercise or recreation outside dance-halls or moving picture shows. These, of course, do not include all of the workers, but such a great percentage that you will find much sickness and distress occasioned thereby.

"I have been interested in Industrial medicine and surgery about twenty years, and I have found that when people obey the ordinary laws of health, a 10 hour day does not cause harm more than an 8 hour day."

The same physician, however, when giving his opinion as to the best length of the working day for women in industry, answered 8 hours, "as it gives time for rest and proper feeding as well as exercise in the air."

HOURS AND THE MATERNAL FUNCTIONS.

The question was asked "Has the length of the working day any effect on the maternal functions of women?" Thirty doctors answered this question. Ten of the 30 replied that they did not know or had no data, and 11, that they had observed no bad effect on maternity of the hours worked by workers under their supervision. The following positive answers were given:

	Number making comment.
Not when laws of health are observed	1
Long hours have a definite bad effect	6
The maternal function is affected	2
Standing work is bad for women	1
Nursing mothers are affected	1
Depends on the kind of employment	1

HOURS AND ACCIDENTS.

Replies to this question did not indicate any very definite relation between long hours and number of industrial accidents. Of the 31 physicians replying to this question—

6 saw no relation;
7 did not know or had no data on which to answer;
5 found that long hours or fatigue increased the number of accidents;
1 stated that accidents occurred mostly during overtime;
2 reported most accidents within the first two hours of work;
1 found most accidents during the first and last hours of work;
1 observed accidents toward the end of the working period.
1 found most accidents in the forenoon;
6 reported no relation in the shops under their supervision as women are well guarded or in non-hazardous occupations;
1 replied listing three causes of accidents as follows:
(a) new employes;
(b) speeding up;
(c) long hours.

Studies made by the survey appear to indicate that the three factors mentioned by the last report probably operate more or less equally in producing accidents and that the increase of fatigue toward the end of the day seems to operate to diminish both output and accidents instead of increasing the latter.

CHAPTER IV.

REPORTS FROM EMPLOYES.

Field workers interviewed 4,711 working women in Illinois firms. These women were grouped as follows by industries and occupations.*

INDUSTRIES INVESTIGATED.

	Illinois outside Chicago.	Chicago.	Total.
TOTAL	854	3,857	4,711
A Bakers	13	120	133
B Barbers, etc	1	17	18
C Candy	20	184	204
X Canning	255	.....	255
D Cigars	2	81	83
E Cleaners, etc	.....	56	56
F Clothing	124	430	554
G Dry goods stores	152	591	743
H Hotels	36	176	212
I Laundries	46	225	271
J Millinery	13	168	181
K Miscellaneous food	12	51	63
L Miscellaneous manufacturing	112	913	1,025
M Miscellaneous professional service	.....	49	49
N Miscellaneous trade	5	186	191
O Printers and binders	24	247	271
P Restaurants	39	363	402

OCCUPATIONS INVESTIGATED.

	Illinois outside Chicago.	Chicago.	Total.
TOTAL	854	3,857	4,711
1 Manufacturing and mechanical	515	1,847	2,362
2 Transportation	2	40	42
3 Trade	146	487	633
4 Professional service	1	27	28
5 Personal service	129	716	845
6 Clerical	61	740	801

Questions asked employes included age, conjugal condition, number hours worked per day and per week, length of service, length of lunch period, holidays and vacations. In addition each employe was asked to give a statement of any effect on her of long hours or other working conditions. Whenever any remarks of this sort were made, they were noted on the questionaire and all complaints were tabulated as such. An analysis of the remarks was made separately.

* All the occupations may be found within a single industry. An explanation of what the various occupations included will be found on page 57 of this chapter.

General facts shown by an analysis of the employe reports are:

1. All conditions tending to make work more difficult seem to "bunch" for the people who are most in need of protection. Thus the standing occupation conicides with the long-hour occupation. The long-hour occupations are most frequent for the group of married women with children. Overtime is found more frequently in the long-hour groups, and Saturday, Sunday and night work will be found most prevalent among workers who stand, workers who are mothers, and those who for other reasons are in need of easier conditions.

2. Complaints are most frequent among employes who work long hours. Clerical workers and workers in short-hour industries make few complaints.

3. Overtime increases generally with hours; in other words, employes working long hours are more frequently asked to put in overtime than other employes.

4. The labor turnover increases directly with the increase in working hours. Over four-fifths of all women working under 43 hours a week had been in their places for a year or more previous to the time in which their report was made. Less than half of the women working 61 hours or more weekly had been in their places for a year or over. The significance of this finding can not be overestimated, as every change in the working force means a money loss to the employer, as well as a loss of efficiency in the business.

5. Analysis of workers who stand at work, who sit at work, or either stand or sit, shows that the workers who stand have the poorest conditions in hours and time allowed for lunch, and that their length of service is distinctly shorter than workers in the other two groups. Moreover 49% of these workers make complaints concerning their work, as compared with only about 40% in the other two groups.

6. An analysis of conjugal conditions shows that conditions as to hours and overtime are poorest for the working mothers. The length of service of this group is, however, good, probably due to the fact that these women are more dependent on their jobs than unmarried women. The group of married women without children shows a high proportion in the long-hour trades, but a much smaller proportion staying in their work one year or over. There is undoubtedly a large element among these women who are working for other reasons than absolute necessity, and hence the group as a whole is probably more independent than the working mothers, or even perhaps than the unmarried women.

7. It was not possible in the reports from Illinois outside of Chicago to analyze individual trades since in most cases the number of employes is too few to serve as a basis. In the canning trade where 255 women were interviewed, the hours are exceptionally long, complaints are frequent, and the average length of service of women engaged is comparatively short. Nearly half of the women interviewed were working their first season in the canneries when interviewed. The high turnover in this industry is the more significant since the population in the canning districts is relatively stable, and it might be supposed that a large proportion of the same employes would hold over from year to year.
8. In general, firms in Chicago show the same facts as those in Illinois, outside of Chicago. The Chicago firms work somewhat shorter hours on an average. The proportion of complaints is considerably less, but complaints are distributed in about the same proportion between various hour groups. On the whole, it may be said that the Chicago and out of Chicago tables admit of direct comparisons, and point to the same conclusions.

The detailed tables which follow show the significant findings resulting from interviews with employes. Each table is interpreted by the page following, so that significant points may easily be grasped.

TABLE 7A—GENERAL CONDITIONS AS REPORTED BY EMPLOYES INTERVIEWED—ILLINOIS OUTSIDE CHICAGO.

	Total.	Under 43 hours.	43 and under 49 hours.	49 and under 55 hours.	55 and under 61 hours.	61 hours and over.
TOTAL	854	11	113	198	418	114
Age of Employe—						
Under 16 years	14	.....	14	.....	.....	.....
16 years and over	840	11	99	198	418	114
Hours per Day—						
Under 8 hours	24	11	6	6	1	.....
8 and under 9	157	.....	96	41	18	2
9 and under 10	294	.....	9	149	118	18
10 hours	379	.....	2	2	281	94
Length of Service—						
Under 6 months	298	2	33	55	146	62
6 months and under 1 year	63	.....	9	21	28	5
1 year and over	493	9	71	122	244	47
Overtime	204	1	34	14	119	36
Lunch Period—						
Under ½ hour	71	2	10	4	14	41
½ hour and under 1 hour	166	.....	24	61	70	11
1 hour and over	617	9	79	133	334	62
Rest Period—	85	.....	.....	4	65	16
Work Saturday p. m., always	601	7	43	90	347	114
Work Saturday p. m., sometimes	83	.....	28	30	25	.....
Work Sunday, always	108	1	3	7	27	70
Work Sunday, sometimes	25	2	.....	7	8	8
Work nights, always	10	.....	.....	1	1	8
Work nights, sometimes	237	3	9	28	184	13
Holidays off	575	8	96	186	248	37
Vacation	5	.....	.....	.....	5	.....
Number making complaints	386	2	30	58	229	67

TABLE 7B—GENERAL CONDITIONS AS REPORTED BY EMPLOYES INTERVIEWED—CHICAGO.

	Total.	Under 43 hours.	43 and under 49 hours.	49 and under 55 hours.	55 and under 61 hours.	61 hours and over.
TOTAL	3,857	252	1,516	1,667	312	110
Age of Employe—						
Under 16 years	118	3	115	.....	.....	.....
16 and over	3,739	249	1,401	1,667	312	110
Hours per Day—						
Under 8 hours	316	237	48	31	.....	.....
8 and under 9	1,754	9	1,435	253	57	.....
9 and under 10	1,684	6	33	1,381	192	72
10 hours	103	.....	.....	2	63	38
Length of Service—						
Under 6 months	1,339	87	473	598	117	64
6 months and under 1 year	469	34	185	197	35	18
1 year and over	2,049	131	858	872	160	28
Overtime	513	45	212	208	42	6
Lunch Period—						
Under ½ hour	109	64	8	6	23	8
½ hour and under 1 hour	2,259	45	776	1,197	173	68
1 hour and over	1,489	143	732	464	116	34
Rest Period	752	25	365	308	46	8
Saturday afternoon, always	1,072	74	106	531	254	107
Saturday afternoon, sometimes	569	22	336	203	17	1
Sunday, always	140	2	10	45	55	28
Sunday, sometimes	219	34	18	34	53	80
Nights, always	19	11	1	2	1	4
Nights, sometimes	338	7	5	250	75	1
Holidays off	3,503	191	1,480	1,599	206	27
Vacation	342	8	193	128	13	.....
Complaints	967	39	230	535	106	57

INTERPRETATION OF TABLES 7A AND 7B.

A very small proportion of women employed in Illinois are under 16 years of age. This is probably due in part to the restrictions on hours incident to the employing of such girls.

In firms outside of Chicago the most common working day is 10 hours. Nearly half of all employes interviewed were working a day of this length. In Chicago the number is about evenly divided between those working 8 to 9 hours and those working from 9 to 10, while the 10-hour day is even less frequent than the day under 8 hours in length.

The proportion of 10-hour days in Illinois firms outside of Chicago, as shown by Table 7A, is probably somewhat higher than the actual on account of the fact that numerous canneries were visited, and that these raised the proportion of women working long hours.

The figures on lunch periods, rest periods, etc., are self-explanatory. Saturday afternoon work is much more common outside Chicago than in Chicago, and the proportion of employes working on Sundays (always or sometimes) is higher.

In defining Saturday, Sunday and night work, the following standards were used:

a. Saturday afternoon work is any work after 1 p. m. and before 6 p. m. When an employe receives a morning or an afternoon off during the week, she is not counted as working Saturday afternoon.

b. Sunday work is counted as such only where the worker puts in over six days during the week. Thus, if an employe works Sundays, but has Tuesday free, she would not be counted as doing Sunday work.

c. Work after 9 p. m. and before 6 a. m. is counted as night work. This standard follows the ordinary standard of states prohibiting or regulating night work for women. No attempt was made to interview employes on night shifts. The night workers listed are ordinarily those in hotels, restaurants, etc., who work a part of the day as well as part of the night.

The largest proportion of employes (Table 7A) having lunch periods of less than half an hour is found in the group working 61 hours and over. This group also includes the greatest proportion working Sundays and nights, with the fewest holidays. In Table 7B the groups working 55 hours and over account for most of the Sunday work, while night work is most frequent in the group working 49 to 54 hours per week. Holidays are least frequent for the long-hour groups.

No percentage analysis for Tables 7, 8 and 9 has been made. The topics selected for percentage analysis are length of service, overtime and complaints, standing and sitting condition and conjugal conditions. These will be found analyzed in Tables 10 to 20.

TABLE 8A—EMPLOYES REPORTS GROUPED BY INDUSTRIES—ILLINOIS OUTSIDE CHICAGO.

	Total.	A—Bakers.	B—Barbers, etc.	C—Candy mfg.	X—Canning.	D—Cigar mfg.	F—Clothing.	G—Dry goods.	H—Hotels.	I—Laundries.	J—Millinery.	K—Misc. food.	L—Misc. mfg.	N—Misc. trade.	O—Printers, etc.	P—Restaurants.
TOTAL	854	13	1	20	255	2	124	152	36	46	13	12	112	5	24	3
Age—																
Women under 16 years	14	..	..	....	....	..	6	1	....	....	....	1	6	....	....	..
Women 16 years and over	840	13	1	20	255	2	118	151	36	46	13	11	106	5	24	39
Hours per Day—																
Under 8 hours	24	..	..	2	3	..	....	6	8	3	....	....	....	....	....	2
8 hours and less than 9	157	2	..	....	21	2	36	34	14	7	2	5	7	4	20	3
9 hours and less than 10	294	4	1	10	31	..	44	108	9	17	10	6	37	1	4	12
10 hours	379	7	..	8	200	..	44	4	5	19	1	1	68	....	....	22
Length of Service—																
Under six months	298	9	..	9	113	2	25	40	15	10	1	1	44	1	4	24
6 months and under 1 year	63	1	..	2	2	..	13	17	5	5	2	3	8	....	2	3
1 year and over	493	3	1	9	140	..	86	95	16	31	10	8	60	4	18	12
Overtime	204	..	1	3	120	..	3	9	7	6	6	4	9	1	20	15
Lunch Period—																
Under ½ hour	71	3	..	1	2	..	9	1	18	1	....	....	....	....	....	36
½ hour and under 1 hour	166	..	..	7	43	2	35	....	1	21	....	....	55	....	....	2
1 hour and over	617	10	1	12	210	..	80	151	17	24	13	12	57	5	24	1
Rest Period	85	1	..	....	28	..	....	41	4	1	....	....	5	....	....	5
Saturday p. m., always	601	13	1	11	238	..	29	150	32	17	13	11	38	2	7	39
Saturday p. m., sometimes	83	..	..	7	1	..	16	....	....	7	....	....	34	1	17	..
Sunday, always	108	6	..	8	14	..	....	....	36	....	....	....	7	....	....	37
Sunday, sometimes	25	2	..	2	16	..	....	....	....	....	....	....	3	....	....	2
Nights, always	10	3	..	4	....	..	....	....	....	....	....	....	....	....	....	3
Nights, sometimes	237	2	1	5	103	..	....	112	4	....	6	....	....	....	....	4
Holidays	575	6	1	12	38	2	124	152	11	46	13	12	112	5	24	18
Vacation	5	..	..	....	....	..	....	5	....	....	....	....	....	....	....	..
Complaints	386	4	..	5	133	..	56	62	10	22	7	1	61	....	5	20

TABLE 8B—EMPLOYES REPORTS GROUPED BY INDUSTRIES—CHICAGO.

	Total.	A—Bakers.	B—Barbers, etc.	C—Candy mfg.	D—Cigar mfg.	E—Cleaners.	F—Cloth. mfg.	G—Dry goods.	H—Hotels.	I—Laundries.	J—Millinery.	K—Misc. food.	L—Misc. mfg.	M—Misc. prof. services.	N—Misc. trade.	O—Printers, etc.	P—Restaurants
TOTAL	3,857	120	17	184	81	56	430	591	176	225	168	51	913	49	186	247	363
Ages—																	
Under 16 years	118	4	..	12	3	..	34	10	....	3	4	3	24	1	1	19	....
16 and over	3,739	116	17	172	78	56	396	581	176	222	164	48	889	48	185	228	363
Hours per Day—																	
Under 8 hours	316	6	2	1	..	..	5	21	38	3	12	..	49	20	31	21	107
8 and less than 9	1,754	106	13	55	42	5	149	360	83	16	56	21	421	29	132	191	75
9 and less than 10	1,684	7	2	128	39	41	276	210	41	204	100	21	419	....	22	35	139
10 hours	103	1	..	....	..	10	....	....	14	2	....	9	24	....	1	....	42
Length of Service—																	
Under 6 months	1,339	44	4	33	14	18	147	130	77	68	56	15	402	13	67	73	178
6 months, under 1 year	469	13	..	25	8	7	33	70	27	29	20	1	125	4	21	30	56
1 year and over	2,049	63	13	126	59	31	250	391	72	128	92	35	386	32	98	144	129
Overtime	513	51	5	20	..	16	39	40	33	8	20	6	153	7	30	54	31
Lunch Period—																	
Under ½ hour	109	2	1	....	1	..	1	4	21	1	3	..	2	....	3	....	70
½ hour, under 1 hour	2,259	3	3	160	73	48	403	85	86	212	21	51	705	14	77	177	141
1 hour and over	1,489	115	13	24	7	8	26	502	69	12	144	..	206	35	106	70	152
Rest	752	55	..	13	..	1	52	400	8	15	2	..	43	2	36	52	73
Saturday p. m., always	1,072	18	11	7	5	24	14	384	166	59	2	..	21	....	22	....	339
Saturday p.m., sometim's	579	23	..	73	1	13	19	193	....	50	113	..	64	2	8	20	....
Sunday, always	140	....	..	....	..	..	....	....	72	....	....	..	....	....	4	....	64
Sunday, sometimes	219	3	..	1	..	..	1	....	77	2	12	..	....	....	1	4	118
Nights, always	19	....	..	....	..	..	....	....	9	....	....	..	1	....	2	....	7
Nights, sometimes	338	....	..	1	..	..	....	284	49	....	....	..	....	....	2	....	2
Holidays	3,503	118	17	184	81	56	430	591	62	220	168	51	913	49	184	247	132
Vacations	342	....	..	13	..	..	....	309	....	1	....	..	....	....	....	19	....
Complaints	967	33	..	37	8	24	163	141	69	62	52	7	197	9	27	34	104

INTERPRETATION OF TABLES 8A AND 8B.

These tables show comparative conditions in the various industries studied. It will be noted that the canning industry presents the worst conditions on hours, overtime, etc., of all the industries studied. Other long-hour industries are the cleaners and dyers, hotels, laundries and restaurants in Chicago.

In Illinois outside of Chicago the same industries are found with long hours, as well as candy manufacturers, dry goods stores and miscellaneous manufacturing.

Special analyses of the industries outside of Chicago are rather unprofitable on account of the small number of workers interviewed in each industry. It will be noticed, however, that comparison of the canneries with the average for Illinois outside of Chicago, shows that the length of service in the canneries is less than the average, and the average hours worked are far longer. Overtime is worked more generally; Saturday, Sunday and night work is more frequent, and complaints are more numerous.

TABLE 9A—EMPLOYES REPORTS GROUPED BY OCCUPATIONS—ILLINOIS OUTSIDE CHICAGO.

	Total.	1. Manufacturing and mechanical.	2. Transportation.	3. Trade.	4. Professional service.	5. Personal service.	6. Clerical.
TOTAL	854	515	2	146	1	129	61
Age of Employe—							
Under 16 years	14	13	.....	1	.....	.....	.....
16 years and over	840	502	2	145	1	129	61
Hours per Day—							
Under 8 hours	24	2	.....	6	.....	14	2
8 and less than 9 hours	157	79	.....	28	.....	23	27
9 and less than 10 hours	294	127	2	102	.....	38	25
10 hours	379	307	.....	10	1	54	7
Length of Service—							
Under 6 months	298	180	.....	47	.....	57	14
6 months and under 1 year	63	29	.....	16	.....	12	6
1 year and over	493	306	2	83	1	60	41
Overtime	204	149	.....	9	.....	32	14
Lunch Period—							
Under ½ hour	71	11	.....	5	.....	53	2
½ hour and under 1 hour	166	137	.....	.....	.....	23	6
1 hour and over	617	367	2	141	1	53	53
Rest Period	85	33	1	35	.....	12	4
Saturday afternoon, always	601	321	2	145	.....	97	36
Saturday afternoon, sometimes	83	65	.....	.....	.....	7	11
Sunday, always	108	23	.....	7	.....	75	3
Sunday, sometimes	25	19	.....	2	.....	4	.....
Nights, always	10	.....	.....	2	.....	8	.....
Nights, sometimes	237	110	2	101	.....	13	11
Holidays	575	304	2	139	1	74	55
Vacation	5	.....	1	.....	.....	.....	4
Complaints	386	256	1	62	.....	58	9

TABLE 9B—EMPLOYES REPORTS GROUPED BY OCCUPATIONS—CHICAGO.

	Total.	1. Manufacturing and mechanical.	2. Transportation.	3. Trade.	4. Professional service.	5. Personal service.	6. Clerical.
TOTAL	3,857	1,847	40	487	27	716	740
Age of Employe—							
Under 16 years	118	94	....	3	....	3	18
16 years and over	3,739	1,753	40	484	27	713	722
Hours per Day—							
Under 8 hours	316	31	10	16	13	135	111
8 hours and less than 9	1,754	780	28	318	8	162	458
9 hours and less than 10	1,684	996	2	151	6	370	159
10 hours	103	40	....	2	....	49	12
Length of Service—							
Under 6 months	1,339	682	9	100	7	313	228
6 months and under 1 year	469	205	6	50	3	102	103
1 year and over	2,049	960	25	337	17	301	409
Overtime	513	307	2	25	2	73	104
Lunch Period—							
Under ½ hour	109	8	1	7	....	71	22
½ hour and under 1 hour	2,259	1,501	7	74	3	418	256
1 hour and over	1,489	338	32	406	24	227	462
Rest Period	752	176	13	338	2	76	147
Saturday afternoon, always	1,072	82	8	294	....	518	170
Saturday afternoon, sometimes	579	233	8	184	6	42	106
Sunday, always	140	1	2	2	....	125	10
Sunday, sometimes	219	18	4	2	....	169	26
Nights, always	19	2	....	1	....	14	2
Nights, sometimes	338	4	3	211	....	38	82
Holidays	3,503	1,843	37	484	27	407	705
Vacation	342	13	2	263	3	1	60
Complaints	967	505	4	124	7	235	92

INTERPRETATION OF TABLES 9A AND 9B.

An analysis of Illinois workers according to occupations within a given industry reveals again that bad conditions concentrate within the group less able to endure them. The six occupation divisions are based on census classifications and include roughly:

1. Manufacturing and mechanical—girls working on machine work or hand work in constructing objects for sale.
2. Transportation includes telephone operators only.
3. Trade includes saleswomen in dry goods stores, drug stores, groceries or restaurants (but not waitresses).
4. Professional service includes nurses, matrons, instructors, etc.
5. Personal service includes waitresses in restaurants, workers in laundries, and most of the employes in hotels, also scrub women and other such workers in all industries.
6. Clerical includes stenographers, cashiers, bookkeepers, checkers, mailing clerks, etc.

The group "personal service" is the one in which the hardest conditions are found, for these workers, almost without exception, stand at work and in general put in long hours, although this condition is better in Chicago than in other Illinois localities.

TABLE 10A—LENGTH OF SERVICE AS REPORTED BY EMPLOYES GROUPED ACCORDING TO HOURS WORKED—ILLINOIS OUTSIDE CHICAGO.

	Total women employes.	Worked under 6 months.		Worked 6 months to 1 year.		1 year and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	854	298	34.89	63	7.38	493	57.72
Women Employes Working—							
Under 43 hours	11	2	18.18	.....	.....	9	81.81
From 44 to 48 hours	113	33	29.20	9	7.96	71	62.83
From 49 to 54 hours	198	55	27.77	21	10.60	122	61.61
From 55 to 60 hours	418	146	34.92	28	6.69	244	58.37
61 hours and over	114	62	54.38	5	4.38	47	41.22

TABLE 10B—LENGTH OF SERVICE AS REPORTED BY EMPLOYES GROUPED ACCORDING TO HOURS WORKED—CHICAGO.

	Total women employes.	Worked under 6 months.		Worked 6 months to 1 year.		Worked 1 year and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	3,857	1,339	34.71	469	12.15	2,049	53.12
Women Employes Working—							
Under 43 hours (per week)	252	87	34.68	34	13.49	131	51.98
44 to 48 hours	1,516	473	31.20	185	12.20	858	56.56
49 to 54 hours	1,667	598	35.87	197	11 81	872	52.30
55 to 60 hours	312	117	37.50	35	11.21	160	51.28
61 hour and over	110	64	58.18	18	16.36	28	25.45

INTERPRETATION OF TABLES 10A AND 10B.

Tables 10A and 10B show perhaps the most significant facts concerning hours which the employe reports disclose. It will be noted that (Table 10A) the proportion of workers remaining in a given position a year and over decreases directly as hours increase, that the number of employes who have spent under 6 months at their work increases with the increased hours. Over four-fifths of employes working under 43 hours per week have remained at their work for a year and over, while less than half of the women working 61 hours and over (*i. e.*, 10 hours a day and some Sunday work) have remained at their work as long a time.

In Table 10B the same facts are brought out. Only about one-third of the 8 hour workers (those working 48 hours and fewer each week) have remained in their positions less than 6 months, while considerably over half of the long hour group have been but a short time in their positions, and only a quarter of them have remained at the same work for a year or over.

It has been estimated that the cost of breaking in new employes may run anywhere from $5 to $70 or over. If hours are the factor in labor turnover which would appear from this table, certainly a shorter hour system would seem the more reasonable and economical both for employer and employe.

TABLE 11A—LENGTH OF SERVICE AS REPORTED BY EMPLOYES GROUPED BY INDUSTRIES—ILLINOIS OUTSIDE CHICAGO.

	Total employes.	Worked under 6 months.		Worked 6 months to 1 year.		Worked 1 year and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	854	298	34.89	63	7.38	493	57.72
A Bakers	13	9	69.23	1	7.06	3	23.07
B Barbers etc	1	.....	.....	.....	.....	1	100.
C Candy	20	9	45.	2	10.	9	45.
X Canning	255	113	44.31	2	.78	140	54.90
D Cigars	2	2	100.	.....	.....	.....	.....
C Clothing manufacturing	124	25	20.16	13	10.48	86	69.35
H Dry goods stores	152	40	28.31	17	11.18	95	62.50
I Hotels	36	15	41.60	5	13.88	16	44.44
J Laundries	46	10	21.73	5	10.86	31	67.39
K Millinery	13	1	7.69	2	15.38	10	76.92
L Miscellaneous food	12	1	8.33	3	25.	8	66.66
M Miscellaneous manufacturing	112	44	39.28	8	7.14	60	53.57
N Miscellaneous trade	5	1	20.	.....	.....	4	80.00
O Printers and binders	24	4	16.66	2	8.33	18	75.
P Restaurants	39	24	61.54	3	7.69	12	30.76

TABLE 11B—LENGTH OF SERVICE AS REPORTED BY EMPLOYES GROUPED BY INDUSTRIES—CHICAGO.

	Total	Worked under 6 months.		Worked 6 months to 1 year.		Worked 1 year and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	3,857	1,339	34.71	469	12.15	2,049	53.12
A Bakers	120	44	36.66	13	10.83	63	52.50
B Barbers, etc	17	4	23.52	.....	.....	13	76.47
C Candy manufacturers	184	33	17.93	25	13.58	126	68.04
D Cigar manufacturers	81	14	17.28	8	9.87	59	72.83
E Cleaners, dyers	56	18	32.14	7	12.50	31	55.35
F Clothing manufacturers	430	147	34.18	33	7.67	250	58.13
G Dry goods	591	130	21.99	70	11.84	391	66.15
H Hotels	176	77	43.75	27	15.34	72	40.90
I Laundries	225	68	30.22	29	12.88	128	56.88
J Millinery	168	12	7.14	56	33.33	100	59 52
K Miscellaneous food	51	15	29.41	1	1.96	35	68.62
L Miscellaneous manufacturers	913	402	44.03	125	13.69	386	42.27
M Misc. professional services	49	13	26.53	4	8.16	32	65.30
N Miscellaneous trade	186	67	36.02	21	11.29	98	52.68
O Printers and binders	247	73	29.55	30	12.14	144	58.29
P Restaurants	363	178	49.03	56	15.42	129	35.53

INTERPRETATION OF TABLES 11A AND 11B.

In these tables the facts on length of service are analyzed in relation to industries. Here the long hour industries (canning, hotels, restaurants, etc.) are shown as the ones where the employes are not contented to stay for any length of time. Industries where a high percentage of employes have stayed for a year or over prove to be the short hour industries.

TABLE 12A—LENGTH OF SERVICE AS REPORTED BY EMPLOYES GROUPED ACCORDING TO OCCUPATION—ILLINOIS OUTSIDE OF CHICAGO.

	Total employes.	Worked under 6 months.		Worked 6 months to 1 year.		Worked 1 year and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	854	298	34.87	63	7.37	493	57.72
1 Maufacturing and mechanical	515	180	34.95	29	5.63	306	59.41
2 Transportation	2	.....	.....	.....	.....	2	100.
3 Trade	146	47	32.19	16	10.95	83	56.84
4 Professional service	1	.....	.....	.....	.....	1	100.
5 Personal service	129	57	44.18	12	9.30	60	46.51
6 Clerical	61	14	22.95	6	9.83	41	67.21

TABLE 12B—LENGTH OF SERVICE AS REPORTED BY EMPLOYES GROUPED ACCORDING TO OCCUPATIONS—CHICAGO.

	Total employes.	Worked under 6 months.		Worked 6 months to 1 year.		Worked 1 year and over.	
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	3,857	1,339	34.71	469	12.15	2,049	53.12
1 Manufacturing and mechanical	1,847	682	36.92	205	10.55	960	53.05
2 Transportation	40	9	22.50	6	15.	25	62.50
3 Trade	487	100	20.53	50	10.26	337	69.19
4 Professional service	27	7	25.92	3	11.11	17	62.96
5 Personal service	716	313	43.71	102	14.24	301	42.03
6 Clerical	740	228	30.81	103	13.91	409	55.27

INTERPRETATION OF TABLES 12A AND 12B.

An analysis of occupations brings out the same facts from a different angle. The clerical occupation, that of the stenographer, cashier, bookkeeper or other "office help," is perhaps the most independent of any in which women are found working, because of the fact that good help of this sort is hard to get and easy to lose. Employers have been forced to give good conditions in hours. It was frequently found that the office workers in a given factory had hours five or six fewer per week than the factory workers in the same plant. In Illinois firms outside of Chicago clerical workers show the best record of permanency of any of the groups. Within Chicago their record is exceeded by the telephone operators and professional workers, both of which are high-grade occupations.

Workers in the Chicago department stores (trade) likewise show considerable permanency in their positions, but this is probably due to the high proportion of State Street stores (that is, the large downtown stores) which were investigated. In these stores special effort is made to make employes permanent, and this effort is quite largely successful.

Manufacturing and mechanical, and most especially personal service, show the worst rate of permanency for Chicago and for Illinois outside of Chicago.

TABLE 13A—OVERTIME AS REPORTED BY EMPLOYES GROUPED ACCORDING TO HOURS WORKED—ILLINOIS OUTSIDE CHICAGO.

	Total employes.	Number working overtime.	Per-centage.
TOTAL	854	204	23.88
Women Employes Working—			
Under 43 hours	11	1	9.09
44 to 48 hours	113	34	30.08
49 to 54 hours	198	14	7.07
55 to 60 hours	418	119	28.46
61 hours and over	114	36	31.57

TABLE 13B—OVERTIME AS REPORTED BY EMPLOYES GROUPED ACCORDING TO HOURS WORKED—CHICAGO.

	Total employes.	Number working overtime.	Per-centage.
TOTAL	3,857	513	13.30
Women Employes Working—			
Under 43 hours	252	45	17.85
44 to 48 hours	1,516	212	13.98
49 to 54 hours	1,667	208	12.47
55 to 60 hours	312	42	13.46
61 hours and over	110	6	5.45

INTERPRETATION OF TABLES 13A AND 13B.

Overtime analyzed by hours shows for Illinois people outside Chicago a higher proportion of overtime for the long-hour workers. The greatest proportion of overtime is found among employes working 61 hours and over per week. These conclusions, however, are somewhat neutralized by the Chicago records, which show overtime running about even through the hour groups and decreasing very materially for the 61 hours and over group.

The explanation of the infrequency of overtime among the women working each week 61 hours or more is undoubtedly that, since these women are already working the legal maximum of hours per day, any overtime would mean that their employer would become liable to legal penalty. There is no question but what the ten-hour law is better enforced in Chicago than through the State. In the downstate canneries particularly, but also in restaurants, many employes reported working hours over ten a day, and in some cases over seventy a week.

TABLE 14A—OVERTIME AS REPORTED BY EMPLOYES GROUPED ACCORDING TO INDUSTRIES—ILLINOIS OUTSIDE CHICAGO.

	Total enployes.	Number working overtime.	Per-centage.
TOTAL	854	204	23.89
A Bakers	13	.....	.....
B Barbers	1	1	100.
C Candy	20	3	15.
X Canning	255	120	47.05
D Cigars	2	.....	.....
F Clothing manufacturers	124	3	2.41
G Dry goods stores	152	9	5.92
H Hotels	36	7	19.44
I Laundries	46	6	13.04
J Millinery	13	6	46.15
K Miscellaneous food	12	4	33.33
L Miscellaneous manufacturers	112	9	8.03
N Miscellaneous trade	5	1	20.
O Printers and binders	24	20	83.33
P Restaurants	39	15	38.46

TABLE 14B—OVERTIME AS REPORTED BY EMPLOYES GROUPED ACCORDING TO INDUSTRIES—CHICAGO.

	Total employes.	Number working overtime.	Per-centage.
TOTAL	3,857	513	13.30
A Bakers	120	51	42.50
B Barbers, etc	17	5	29.41
C Candy manufacturers	184	20	10.86
D Cigar manufacturers	81	.....	.....
E Cleaners, etc	56	16	28.57
F Clothing manufacturers	430	39	9.06
G Dry goods	591	40	6.90
H Hotels	176	33	18.75
I Laundries	225	8	3.55
J Millinery	168	20	11.90
K Miscellaneous food	51	6	11.76
L Miscellaneous manufacturing	913	153	10.18
M Miscellaneous professional service	49	7	14.28
N Miscellaneous trade	186	30	16.12
O Printers and binders	247	54	21.86
P Restaurant	363	31	8.53

INTERPRETATION OF TABLES 14A AND 14B.

In out of Chicago firms the overtime industries are canning, millinery, printing and binding, restaurants and miscellaneous food manufacture. In Chicago overtime is less frequent, but is found most prevalent among bakers, barbers, cleaners and dyers, and printers and binders.

In general, overtime seems to be practiced in industries where the trade fluctuates considerably, and in seasonal occupations. An interesting fact, however, is that overtime in laundries in Chicago, and to some extent outside, has been reduced to a very small amount. This is an indication of the increased efficiency of laundry proprietors in routing their work so that overtime may be limited.

The same facts are shown in the hat industry (Chicago), a highly seasonal trade, but one which has during the past few years progressed very greatly in the direction of efficient management.

TABLE 15A—OVERTIME AS REPORTED BY EMPLOYES GROUPED ACCORDING TO OCCUPATIONS—ILLINOIS OUTSIDE CHICAGO.

	Total employes.	Number working overtime.	Per-centage.
TOTAL	854	204	23.88
1 Manufacturing and mechanical	515	149	28.93
2 Transportation	2	.....	.....
3 Trade	146	9	6.16
4 Professional service	1	.....	.....
5 Personal service	129	32	24.80
6 Clerical service	61	14	22.95

TABLE 15B—OVERTIME AS REPORTED BY EMPLOYES GROUPED ACCORDING TO OCCUPATION—CHICAGO

	Total employes.	Number working overtime.	Per-centage.
TOTAL	3,857	513	13.30
1 Manufacturing and mechanical	1,847	307	16.62
2 Transportation	40	2	5.
3 Trade	487	25	5.13
4 Professional service	27	2	7.40
5 Personal	716	73	10.19
6 Clerical	740	104	14.05

INTERPRETATION OF TABLES 15A AND 15B.

As might be expected, manufacturing and mechanical occupations show the highest proportion of overtime, both in and out of Chicago.

Next comes the personal service (or in Chicago, clerical). Workers in the transportation trade and professional service occupations have almost negligible overtime.

TABLE 16A—COMPLAINTS MADE BY EMPLOYES GROUPED ACCORDING TO HOURS WORKED—ILLINOIS OUTSIDE CHICAGO.

	Total employes.	Number making complaints.	Per-centage.
TOTAL	854	386	45.19
Women Employes Working—			
Under 43 hours	11	2	18.18
44 to 48 hours	113	30	26.54
49 to 54 hours	198	58	29.29
55 to 60 hours	418	229	54.78
61 hours and over	114	67	58.77

TABLE 16B—COMPLAINTS MADE BY EMPLOYES GROUPED ACCORDING TO HOURS WORKED—CHICAGO.

	Total employes.	Number making complaints.	Per-centage.
TOTAL	3,857	967	25.07
Women Employers Working—			
Under 43 hours (per week)	252	39	15.47
44 to 48 hours	1,516	230	15.17
49 to 54 hours	1,667	535	32.09
55 to 60 hours	312	106	33.97
61 hours and over	110	57	51.81

INTERPRETATION OF TABLES 16A AND 16B.

These tables show an unmistakable correlation between the length of hours and the worker's attitude toward her work. Each employe interviewed was given the opportunity to express her reaction toward her work and the conditions under which it was performed.

It is, of course, true that some workers will complain under the best of conditions and others will bear uncomplainingly long hours and hard labor. When we find, however, that less than one-fifth of all employes who worked under 43 hours per week have complaints concerning their work, and that considerably over half the employes working 61 hours and over complained, the conclusion can not be avoided that there is a direct relation between hours and employe well being.

Complaints include "tired," "feet sore," "backache," "eyes tired," "nervous," "too tired for recreation." A number of employes stated that they "stalled" during the last hour of the day, and a number gave it as their opinion that they could do as much in a shorter working day.

TABLE 17A—COMPLAINTS MADE BY EMPLOYES, GROUPED ACCORDING TO INDUSTRIES—ILLINOIS OUTSIDE CHICAGO.

	Total employes.	Number making complaints.	Per-centage.
TOTAL	854	386	45.19
A Bakers	13	4	30.76
B Barbers	1	.....	.....
C Candy	20	5	25.
X Canning	255	133	52.15
D Cigars	2	.....	.....
F Clothing manufacturing	124	56	45.16
G Dry goods stores	152	62	40.78
H Hotels	36	10	27.77
I Laundries	46	22	47.82
J Millinery	13	7	53.84
K Miscellaneous food	12	1	8.33
L Miscellaneous manufacturing	112	61	54.46
N Miscellaneous trade	5	.....	.....
O Printers and binders	24	5	20.83
P Restaurants	39	20	51.28

TABLE 17B—COMPLAINTS MADE BY EMPLOYES, GROUPED ACCORDING TO INDUSTRIES—CHICAGO.

	Total employes.	Number making complaints.	Per centage.
TOTAL	3,857	967	25.07
A Bakers	120	33	27.50
B Barbers	17	.....	.....
C Candy manufacturing	184	37	20.10
D Cigar manufacturing	81	8	9.87
E Cleaners and dyers	56	24	42.85
F Clothing manufacturing	430	163	37.90
G Dry goods	591	141	23.85
H Hotels	176	69	39.20
I Laundries	225	62	27.55
J Millinery	168	52	30.95
K Miscellaneous food	51	7	13.72
L Miscellaneous manufacturing	913	197	21.57
M Miscellaneous professional service	49	9	18.36
N Miscellaneous trade	186	27	14.51
O Printers and binders	247	34	13.76
P Restaurants	363	104	28.65

INTERPRETATION OF TABLES 17A AND 17B.

Outside of Chicago the canneries, miscellaneous manufacturing, restaurants, and millinery are industries in which the greatest number of complaints are found. Over half of the employes in these industries have complaints to make. The best trades in this regard are the candy manufacturers, miscellaneous food manufacturers, and printers and binders. Hotels likewise seem to have a rather small proportion of complaints.

In Chicago firms the cleaners and dyers show the highest proportion of complaints, and other industries which are high in this respect are the clothing manufacturers, hotels, millinery and restaurants. Complaints are fewer among Chicago employes, possibly because conditions among city workers are somewhat better than those outside of Chicago.

It is noticeable that the cigar manufacturers show very few complaints. In this industry an 8-hour day has been in force for many years.

TABLE 18A—COMPLAINTS MADE BY EMPLOYES GROUPED ACCORDING TO OCCUPATIONS—ILLINOIS OUTSIDE CHICAGO.

	Total employes.	Number making complaints.	Per centage.
TOTAL	854	386	45.19
1 Manufacturing and mechanical	515	256	49.70
2 Transportation	2	1	50.
3 Trade	146	62	42.46
4 Professional service	1	.....	.....
5 Personal service	129	58	44.96
9 Clerical	61	9	14.75

TABLE 18B—COMPLAINTS MADE BY EMPLOYES GROUPED ACCORDING TO OCCUPATIONS—CHICAGO.

	Total employes.	Total complaints.	Per centage complaints.
TOTAL	3,857	967	25.07
1 Manufacturing and mechanical	1,847	505	27.34
2 Transportation	40	4	10.
3 Trade	487	124	25.46
4 Professional service	27	7	25.59
5 Personal service	716	235	32.82
6 Clerical	740	92	12.43

INTERPRETATION OF TABLES 18A AND 18B.

Here again the advantage of the clerical occupation is apparent. Both in and outside of Chicago these workers show a very small proportion of complaints. Most of the complaints come from workers in personal service (in Chicago), and workers in personal service, trade, manufacturing and mechanical (outside of Chicago).

TABLE 19A—CONJUGAL CONDITIONS REPORTED BY EMPLOYES INTERVIEWED —ILLINOIS OUTSIDE CHICAGO.

	Total.		Unmarried and widows without children.		Widows with children.		Married with children.		Married and no children.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	854	.....	567	.....	15	.....	194	.....	78	.....
Hours per Week—										
Under 43 hours	11	1.29	6	1.06	....	.....	2	1.03	3	3.85
43 and under 48	113	13.23	89	15.70	2	13.33	14	7.22	8	10.26
49 and under 54	198	23.19	149	26.26	3	20.	30	15.46	16	20.51
55 and under 60	418	48.95	254	44.80	8	53.34	117	60.31	39	50.
61 and over	114	13.35	69	12.17	2	13.33	31	15.98	12	15.38
Hours per Day—										
Under 8 hours	24	2.81	13	2.29	....	.....	7	3.61	4	5.14
8 and under 9	157	18.38	116	20.46	2	13.33	24	12.37	15	19.23
9 and under 10	294	34.43	231	40.76	5	33.33	42	21.65	16	20.51
10 hours	379	44.38	207	36.51	8	53.34	121	62.37	43	55.14
Length of Service—										
Under 6 months	298	34.90	192	33.86	5	33.33	68	35.05	33	42.31
6 months and under 1 year	63	7.38	46	8.11	2	13.33	9	4.64	6	7.69
1 year and over	493	57.73	329	58.02	8	53.34	117	60.31	39	50.
Overtime	204	23.89	105	18.52	5	33.33	70	36.08	24	30.77
Lunch Period—										
Under ½ hour	71	8.31	49	8.64	1	6.67	13	6.70	8	10.26
½ hour and under 1	166	19.44	115	20.18	2	13.33	36	19.07	13	16.66
1 hour and over	617	72.25	403	71.08	12	80.	145	74.74	57	73.08
Rest	85	9.94	59	10.41	1	6.67	19	9.79	6	7.69
Saturday, always	601	70.37	369	65.08	10	66.67	156	80.41	66	84.62
Saturday, sometimes	83	9.72	67	11.82	3	20.	9	4.64	4	5.14
Sunday, always	108	12.65	66	11.64	2	13.33	29	14.43	11	14.10
Sunday, sometimes	25	2.93	14	2.47	1	6.67	9	4.64	1	1.28
Nights, always	10	1.17	9	1.59	....	.....	1	.52	....	.....
Nights, sometimes	237	27.75	153	26.98	5	33.33	58	29.90	21	26.92
Holidays	575	67.33	437	77.08	11	73.33	80	41.24	47	60.26
Complaints	386	45.20	228	40.21	11	73.33	100	51.55	47	60.26

TABLE 19B—CONJUGAL CONDITIONS REPORTED BY EMPLOYES INTERVIEWED—CHICAGO.

	Total.		Unmarried and widows without children.		Widows with children.		Married with children.		Married and no children.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	3,857		2,826		220		396		415	
Hours per Week—										
Under 43 hours	252	6.53	159	5.56	15	6.08	32	8.08	46	11.08
43 and under 48	1,516	39.30	1,181	41.35	92	41.81	121	30.55	122	29.39
49 and under 54	1,667	43.22	1,214	42.50	95	43.18	172	43.34	186	44.81
55 and under 60	312	8.08	212	7.42	13	5.90	46	11.61	41	9.87
61 and over	110	2.85	60	2.10	5	2.27	25	6.31	20	4.81
Hours per Day—										
Under 8 hours	316	8.19	196	6.92	16	7.27	45	11.36	59	14.21
8 and under 9	1,754	45.47	1,359	47.58	106	48.18	139	35.10	150	36.14
9 and under 10	1,684	43.66	1,212	42.43	93	42.27	192	48.48	187	45.06
10 hours	103	2.67	59	2.06	5	2.27	20	5.05	19	4.57
Length of Service—										
Under 6 months	1,339	34.71	880	31.13	81	36.81	178	44.94	200	48.19
6 months and under 1 year	469	12.15	336	11.88	26	11.81	63	15.90	44	10.60
1 year and over	2,049	53.12	1,610	56.44	113	51.36	155	39.14	171	41.20
Overtime:	513	13.30	408	14.33	22	10.	42	10.60	41	9.87
Lunch Period—										
Under ½ hour	109	2.82	45	1.58	9	4.09	22	5.55	33	7.95
½ hour and under 1 hour	2,259	38.56	1,608	56.36	134	60.90	263	66.41	254	61.20
1 hour and over	1,489	38.60	1,173	41.50	77	35.	111	28.03	128	30.84
Rest	752	19.49	580	20.31	53	24.09	56	14.14	63	15.10
Saturday, always	1,072	27.79	728	25.49	53	24.09	136	34.34	155	37.34
Saturday, sometimes	579	14.95	442	15.58	43	19.54	47	11.86	47	11.32
Sunday, always	140	3.62	80	2.80	7	3.18	27	6.81	26	6.26
Sunday, sometimes	219	5.67	139	4.90	7	3.18	32	8.08	41	9.87
Nights, always	19	.49	4	.14	1	.45	13	3.28	1	.24
Nights, somestimes	338	8.76	263	9.20	14	6.36	37	9.34	24	5.78
Holidays	3,503	90.82	2,614	91.53	204	92.72	336	84.84	349	84.09
Complaints	967	25.07	639	22.37	75	34.09	131	33.08	122	29.39

INTERPRETATION OF TABLES 19A AND 19B.

These tables are among the most significant brought out by employes' interviews. It will be noted in Table 19A that the working mothers have the hardest conditions in regard to hours. These conditions show slightly better for the married women without children, and best of all for the unmarried women and widows without children, who were classed together. Hours per day are for the married women with children very much heavier than the average. Sixty-two per cent of the married women with children work 10 hours per day, while 44 per cent of all the workers outside of Chicago work 10 hours per day.

Table 19A shows the groups to rank as follows: Most permanent, married women with children; second, unmarried women; third, widows with children; fourth, married women without children. Married mothers are probably most dependent on their jobs of any of these classes. Unmarried women having secured better conditions, tend to be more permanent while the married women without children, who are subjected to bad conditions on hours, will not stay in one position for a long time.

Overtime (Table 19B) is (as might be expected) most prevalent among married mothers and less among unmarried women. The working mothers (married with children) have fewer holidays. Their complaints as well as those of the other two groups show considerably above the average in number.

In Table 19B the same general facts are brought out. Hours are longest for the married women with children. Here this group shows a length of service shorter than the average and about equal to the length of service of the women who are married with no children. Overtime variations between groups are not particularly significant.

Married women show lunch periods slightly shorter than the average, have fewer rest periods, and work more frequently on Saturday afternoons, Sundays and nights than the average. Working mothers (married with children) have fewer holidays than the average. In this table as in the out of Chicago table, the working mothers complain most frequently of working conditions.

NOTE ON HOURS AND INFANT WELFARE.

Attempt was made to analyze any relation existing between the hours of labor of working mothers and the health of both mothers and children. It was found almost impossible, owing to the absence of collected data, to analyze this question statistically. Facts and opinions were sought from officials of the Infant Welfare Society of Chicago including the various branch stations in industrial districts, and from others who might have knowledge of the problem.

In the stockyards it is claimed by officers of the Infant Welfare Society that the extensive employment of married women on night shifts has meant an enormous increase of undernourishment and other diseases among mothers as well as babies and young children in their families.

The night shifts range from 8 to 10 hours in length. This sort of work is particularly attractive to married women and mothers of young children because it means that they can be away from home during the time when the children are sleeping. Obviously such employment means a great loss of sleep and time for rest to mothers so employed.

In this case it is probably the fact of night work rather than the length of working hours which causes bad conditions. It is equally obvious, however, that shorter night shifts will mean more sleep for the worker and so will mitigate conditions bad in any event.

From two branch stations of the Infant Welfare Society where babies are brought in for examination and advice,* information was sought as to the proportion of undernourishment and illness among the children of working mothers. Both these stations are in the lower class industrial district where long hours are the rule.

In the first station, 119 babies were registered. Of these 76 were found in good condition and 43 in poor condition. Among the 76 well babies, 3 mothers were working. Among the 43 improperly nourished babies, 10 working mothers were found.

* This examination includes babies in good condition as well as others. It is a part of the work of the "Children's Year" of the United States Children's Bureau.

In the second district investigated, 175 babies were registered. Of the 10 whose mothers were working all the children except one were found in bad condition. Of the 165 whose mothers were not working, only 25 were found in poor condition.

These facts may be due to some extent to the very necessity which impels mothers to seek employment outside of the home, and yet in many cases where working mothers had registered their babies in one of these two stations, the father was also employed.

It is given as the impression of social workers, physicians and others that the majority of married women in employment (or at least of working mothers), are working for needed revenue, rather than for "pin money."

In the returns from the questionnaires sent to the industrial physicians (Chapter III), 10 out of 12 doctors making definite comment upon the relation of hours and the maternal functions stated that long hours of work have a definitely bad effect.

TABLE 20A—STANDING AND SITTING AT WORK REPORTED BY EMPLOYES INTERVIEWED—ILLINOIS OUTSIDE CHICAGO.

	Total.		Stand.		Sit.		Either sit or stand.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	854	.....	407	.....	363	.....	84	.....
Hours per Week—								
Under 43 hours	11	1.29	7	1.72	3	.82	1	1.19
43 and under 48 hours	113	13.23	40	9.83	61	16.81	12	14.29
49 and under 54 hours	198	23.18	83	20.39	93	25.62	22	26.19
55 and under 60 hours	418	48.95	208	51.11	173	47.66	37	44.04
61 and over	114	13.35	69	16.95	33	9.09	12	14.29
Hours per Day—								
Under 8 hours	24	2.81	19	4.67	4	1.10	1	1.19
8 and under 9 hours	157	18.38	68	16.71	73	20.11	16	19.05
9 and under 10 hours	294	34.43	164	40.29	102	28.10	28	33.33
10 hours	379	44.38	156	38.33	184	50.69	39	46.43
Age—								
Under 16 years	14	1.64	7	1.72	5	1.37	2	2.38
16 years and over	840	98.36	400	98.28	358	98.63	82	97.62
Length of Service—								
Under 6 months	298	34.89	155	38.08	120	33.06	23	27.38
6 months and under 1 year	63	7.38	33	8.11	23	6.33	7	8.33
1 year and over	493	57.73	219	53.81	220	60.61	54	64.29
Overtime	204	23.89	75	18.43	91	25.07	38	45.24
Lunch Period—								
Under ½ hour	71	8.31	64	15.72	3	.82	4	4.76
½ hour and under 1 hour	166	19.44	66	16.22	88	24.24	12	14.29
1 hour and over	617	72.25	277	68.06	272	74.94	68	80.95
Rest	85	9.95	54	13.27	23	6.34	8	9.52
Saturday, always	541	63.35	330	81.08	210	57.86	61	72.66
Saturday, sometimes	83	9.72	22	5.41	50	13.78	11	13.10
Sunday, always	108	12.65	94	23.10	9	2.48	5	5.95
Sunday, sometimes	25	2.93	8	1.97	12	3.31	5	5.95
Night, always	10	1.17	10	2.46	.....	.....	.....	.....
Night, sometimes	237	27.75	137	33.66	76	20.94	24	28.58
Holidays	575	67.33	282	69.29	239	65.84	54	64.32
Complaints	386	45.20	199	48.89	157	43.25	30	35.73

TABLE 20B—STANDING AND SITTING AT WORK—REPORTED BY EMPLOYES INTERVIEWED—CHICAGO.

	Total.		Stand.		Sit.		Either sit or stand.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
TOTAL	3,857	.....	1,586	.....	1,598	.....	373	.....
Hours per Week—								
Under 43 hours	252	6.53	118	7.44	117	6.16	17	4.55
43 and under 48	1,516	39.30	414	26.10	959	50.52	143	38.33
49 and under 54	1,667	43.22	735	46.34	755	39.77	177	47.45
55 and under 60	312	8.08	221	13.93	63	3.31	28	7.50
61 and over	110	2.85	98	6.17	4	.21	8	2.14
Hours per Day—								
Under 8 hours	316	8.19	156	9.83	138	7.27	22	5.89
8 and under 9	1,754	45.47	614	38.71	976	51.42	164	43.96
9 and under 10	1,684	43.66	754	47.54	752	39.62	178	47.72
10 hours	103	2.67	62	3.90	32	1.68	9	2.41
Age—								
Under 16 years	118	3.05	33	2.08	65	3.42	20	5.36
16 years and over	3,739	96.94	1,553	97.91	1,833	96.57	353	94.63
Length of Service—								
Under 6 months	1,339	34.71	585	36.88	662	34.87	92	24.66
6 months and under 1 year	469	12.15	184	11.60	236	12.43	49	13.13
1 year and over	2,049	53.12	817	51.51	1,000	52.68	232	62.19
Overtime	513	13.24	195	12.29	278	14.64	40	10.72
Lunch Period—								
Under ½ hour	109	2.82	80	5.04	24	1.26	5	1.34
½ hour and under 1 hour	2,259	58.56	806	50.80	1,241	65.38	212	56.83
1 hour and over	1,489	38.60	700	44.13	633	33.35	156	41.82
Rest	752	19.49	440	27.74	240	12.64	72	16.62
Saturday, always	1,072	27.79	818	51.57	162	8.58	92	24.66
Saturday, sometimes	579	15.01	264	16.64	258	13.59	57	15.28
Sunday, always	140	3.62	126	7.94	10	.52	4	1.07
Sunday, sometimes	219	5.67	164	10.34	35	1.84	20	5.36
Nights, always	19	.49	17	1.07	2	.10	.....	.....
Nights, sometimes	338	8.76	244	15.38	55	2.89	39	10.45
Holidays	3,503	90.82	1,277	80.51	1,867	98.36	359	96.24
Complaints	967	22.47	503	31.71	399	21.02	65	17.42

INTERPRETATION OF TABLES 20A AND 20B.

These tables show again the concentration of bad conditions. The workers who stand (mainly personal service and trade workers in hotels, restaurants, department stores, etc.) have worse conditions than those who sit or than those who may either sit or stand.

Table 20A shows the standing workers as having worse conditions in hours per day and per week than either of the other two classes. The length of service of these classes is as might be expected, low. Overtime is slightly less for the standing workers and the lunch period tends to be shorter. This latter fact has distinct bearing on the health of the worker. Where workers must stand, and have only a short period for lunch, the process of digestion is likely to be affected.

Standing workers do more Saturday afternoon, Sunday and night work than those in other groups. Their complaints are considerably higher.

Within Chicago the same conditions are found. Hours are longer for the standing group. Length of service is slightly less. Here the lunch period for this group is not far from average. Holidays are distinctly fewer and the complaints are 9% greater than the average.

CHAPTER V.

FATIGUE AND PRODUCTION UNDER REDUCED HOURS.

Since there is a direct connection between health and production, fatigue studies for varying hours are valuable. As the report of the Divisional Committee on Industrial Fatigue states, "one of the readiest means of detecting fatigue is by keeping a record of the output of the individual employe. * * * A falling off in the output indicates fatigue. Where the duration of the working period has been changed fatigue can also be tested by comparing the average output per hour under the earlier and the later schedules."

An increased rate of output is due to greater interest and energy on the part of the workers and so means less fatigue, except where other shop conditions have altered to ensure greater output.

No direct comparison of output between establishments can be made, since conditions are certain to vary widely in different shops. It was attempted to find shops in which the hours of labor had changed without the alteration of any other conditions, and within these shops to compare production under long and short hours.

Three factories were found where hours had been reduced and where conditions of machinery, sanitation, personnel, etc., had remained the same. This chapter records the findings in these three shops.

REDUCED HOURS IN THE SOAP INDUSTRY.

Report was made to the survey of a soap packing plant which had changed its standard hours per day from 10 to 8½ and its standard week from 55 to 48 hours. This change was made early in the summer of 1918.

Company officials were interviewed for authorization to consult output records to determine how production was affected by the shorter working day. Survey representatives were informed that the production per hour remained precisely stationary under 8½ hours as under 10, and that the production per week had fallen off in accordance with the decrease in hours. The rate of production per day per girl, the survey was informed, was 50 cases of soap in a 10-hour day. Likewise, it was stated that in an 8½-hour day the girls would pack 42 or 43 cases of soap.

While workers unquestionably limit their production in many instances, it was thought worth while to check up these records to see whether any change in production really did occur following the change in hours.

A group of 24 workers was selected for study. These 24 were all workers who had been employed by this company at this occupation (that of wrapping and packing a standard brand of soap) for at least three years previous to the period of which study was made.

This group of workers was studied for 10 weeks from February 25 to May 4, 1918, and for 10 weeks from August 5 to October 12, 1918. In other words, it was studied 10 weeks under the long-hour and 10 weeks under the short-hour schedule. At both these times this department was running to capacity, so that no shortage of material would decrease production. In fact, the pressure of work was so great that a night shift was established in late spring and was kept at work until the middle of the fall.

The work on which the soap packing room is engaged consists of wrapping cakes of soap and packing them in cases for sealing and shipment. Five cases an hour has always been considered a good average rate of production, a rate which would lead to a day production of 50 cases under a 10-hour day and 42 to 43 cases under an 8½-hour day. The girls in the special group studied, being the best of the operators, would produce up to the maximum rate per hour.

Facts disclosed by an analysis of production under the long and short working days were:

1. The group studied packed an average of 5.1 cases per hour under the 10-hour day; under the 8½-hour day the same girls packed an average of 5.7 cases per hour, an increase of over half a case per hour, or 11.8%.
2. This increase is not due to the necessity for producing more in order to earn the same wages, as piece rates were increased 33⅓% at the same time that the hours were decreased.
3. The average production per day under the 55-hour week was 42.8 cases. Under the 48-hour week the average production per day was 45.5 cases.
4. Production under the shorter work day and week held a great deal steadier than production under the longer hour schedule. During the first 10-week period studied the production rate fluctuated from 4.1 cases per hour to 6.5 cases per hour. During the second 10-week period studied this fluctuation was from 5.3 to 6.2 cases per hour. This steadiness of production is probably indicative of a greater reserve of energy on the part of the worker, and so of less fatigue.
5. Records of production for the night shift during the nine weeks from August 5 to October 5, 1912, show a much lower rate of production for night workers than for day workers during either of the two periods studied. These conclusions, however, are neutralized by the fact that the night workers were inexperienced and so were not producing under conditions comparable to those of the day workers.

The average production per hour for the same group of workers under the varying hour lengths is given in the table below:

TABLE 21—CASES PACKED PER HOUR—SOAP INDUSTRY.

Week.	10-hour day.	8½-hour day.	Week.	10-hour day.	8½-hour day.
1	5.	5.5	7	5.	5.8
2	5.2	5.6	8	5.4	5.8
3	5.3	5.6	9	5.	5.9
4	5.	5.6	10	4.9	5.8
5	5.2	5.5			
6	5.3	5.8	Entire period	5.1	5.7

It will be seen that at no point do girls working under the 10-hour day reach even the minimum average number of cases per hour which they pack under the 8½-hour day. The average number of cases packed is .6, or 11.8 per cent per hour greater than the number which the same girls packed under the longer day. The week in which 5.4 cases were packed followed two weeks in each of which there were two "short days"—days on which only 4 or 5 hours were worked. The average production per day shows considerably more fluctuations in the spring period than in the fall.

TABLE 22—CASES PACKED PER DAY—SOAP INDUSTRY.

Week.	10-hour day.	8½-hour day.	Week.	10-hour day.	8½-hour day.
1	43.7	41.4	7	40.6	46.3
2	42.1	43.5	8	46.2	45.8
3	38.6	45.6	9	39.5	46.9
4	49.7	44.8	10	48.3	36.
5	41.8	43.8			
6	40.9	45.8	Entire period	42 8	44.5

The average number of cases packed per day by this group of 24 experienced workers was 1.7 cases, or nearly 4 per cent greater when they were working under the 8½-hour day than when their day was 10 hours.

It will also be noticed that fluctuations of output per day under the 10 hours are very much greater than under 8½, except that in the 10th week, the 8½-hour workers fall to 36.0 cases packed per day. This is explained by the fact that a large quantity of soap was spoiled during this week and that the packers were limited in production by the lack of material.

In 6 of the 10 weeks the production per day under the short-hour week exceeds that under the long-hour week.

Analysis was made of the output during each of the 53 days worked in the spring and 54 days worked in the fall period. The table follows:

TABLE 23—CASES PACKED PER HOUR—SOAP INDUSTRY.

Day.	10-hour day.	8½-hour day.	Day.	10-hour day.	8½-hour day.
1	5.08	5.44	28	5.41	5.53
2	5.03	5.57	29	5.26	5.69
3	5.30	5.55	30	4.96	5.77
4	4.76	6.02	31	5.83	5.72
5	.....	5.89	32	5.25	5.76
6	.....	5.28	33	5.23	5.64
7	5.27	5.52	34	6.09	5.81
8	.....	5.63	35	4.74	5.86
9	5.27	5.58	36	5.	5.75
10	5.24	.....	37	4.97	5.78
11	5.30	5.57	38	5.04	5.77
12	5.01	5.50	39	4.99	5.87
13	5.08	5.61	40	4.97	5.81
14	5.53	5.56	41	4.96	5.84
15	5.27	5.49	42	4.96	5.66
16	5.23	5.53	43	5.25	5.69
17	5.22	5.59	44	6.45	5.80
18	5.24	5.48	45	5.22	5.88
19	.....	5.59	46	5.16	5.89
20	4.98	5.69	47	5.25	.....
21	5.00	5.59	48	.....	5.77
22	5.00	5.65	49	5.25	5.79
23	5.00	5.58	50	5.23	5.88
24	.....	5.51	51	5.12	5.90
25	5.26	.....	52	5.21	6.23
26	5.25	5.36	53	4.08	5.76
27	5.23	5.45	54	4.07	5.82

It will readily be seen that the output in cases packed per hour is much steadier during the period when the shorter hours are worked. Hourly output varies during the spring periods from 4.1 cases per hour to 6.5 cases per hour, a difference of 2.4 cases or about 60 per cent. During the fall period the variation is from 5.3 cases to 6.2 cases per hour, a variation of .9 of a case or less than 20 per cent. This fact again bears out the tentative conclusion of the survey that an output showing extreme fluctuations indicates the presence of fatigue, unless other conditions explain such flucuation.

That the output per hour is higher under the short-hour system controverts the statements made by the company official who asserted that employes limited their production to 5 cases per hour, and that this limit held whether the working day was 10 hours or 8½ hours in length. No indications were found that the workers in this department limit their own production. With the increase in energy caused by lessened work time, production tends to find its own maximum level and holds steady at a higher point.

The night shift was put on in this firm in early summer. Attempt was made to study the productive ability of the night workers to see how they compared with employes working through the day. The standard hours for the night shift were 8½. It was found that only a very few of the night workers were experienced enough to be put on piece work. (In this firm new employes are paid by the hour unless their rate of production is high enough to enable them to make a living wage at piece rates.) Only 5 or 6 of the night shift were found to be on piece work, and with these individuals the rate of production was very low, as is shown by the following table.

TABLE 24—OUTPUT OF NIGHT SHIFT—SOAP INDUSTRY.

	Night shift. (10 hours.)	Day shift. (10 hours.)	Day shift. (8½ hours.)
Average production per hour	4.8	5.1	5.7
Average production per day	37.6	42.8	44.5

This difference in rate of production hourly is explainable by the presence of less experienced employes on the night shift. No conclusions can here be drawn concerning the effect of night work on productivity.

REDUCTION OF HOURS IN A CORSET FACTORY.

Graphic illustration of increased output under a shortened working day was found in a large corset factory, employing women almost exclusively.

On October 1, 1917, the hours in this factory were reduced from 54 to 48 per week. Piece rates remained the same.

Results of this change in hours were:

1. The average output of the entire factory per employe per day increased from .831 dozen in 1916 to .883 dozen in 1918, an increase per hour of over 19%.
2. Within a group of 36 steady, experienced workers the weekly output increased 13.4% and the hourly output 31.6% following the decrease in hours.
3. This increase in production was not spasmodic, but was maintained over the entire year following the reduction in hours. No change in machinery or working conditions was made during the period covered by the study.
4. In July, 1918, nine months after the decrease in hours, a 10% wage bonus was instituted. Production during the two months following increased 2.5% per hour, a practically negligible amount.
5. In this factory, then, shortened hours accelerated production to such an extent that the shorter week was actually considerably more productive than the longer. No output acceleration was observed to follow an increase in wages.

To form a rough estimate of production under the 54 and 48 hour weeks, the entire output of the factory in 1916 and 1918 was compared. In 1916, 219 employes produced 182 dozens a day, or .831 dozen per employe. In 1918, 155 employes produced 137 dozens a day, or .883 dozen per employe. This means an increase in production of about 6% a day, or about 19% per hour. If as many employes had been working in 1918 as in 1916 they would have produced an aggregate of about 12 dozens per day more than the employes working under the longer week.

It may be objected that the reduction in the working force eliminated the less experienced, and so the general level of production would tend to be higher. To see to what extent this was the case a group of 36 individual workers was studied. All of these had been

employed in this factory for over a year previous to the change in hours. They came from various departments, as follows:

Strippers	6	Eyeletter	1	Steel stitcher	2
Seamers	7	Folder	1	Paste machine	1
Binders	4	Clasp seamer	1	Boner	1
Garter	5	Finisher	1		
Lace binder	2	Baster	1	Total	36
Shaper	1	Tacker	2		

In this factory wage is an accurate gauge of output in any one department. In studying the 36 experienced workers, therefore, the wage records were taken as output records. As a 10% wage increase was made on July 1, 1918, a decrease of 9.09% was made in recording the wages after July 1, to allow for the wage increase. Wage figures are therefore comparable throughout the study.

During the last five weeks under the 54-hour week the average weekly wage per girl was $10.25, or 19 cents per hour. During the eight weeks following the change it was $11.29. During the year following the change it was $11.62. In other words, the shortening of the week meant an immediate increase in output within this group of 10.1% and an average increase for the ensuing year of 13.4%.

It might be claimed that the fact that the piece rates remained the same before as after the change in hours might be responsible for "speeding" on the part of the employes and that this "speeding" might account for the increase in the output. If this rate of production could be kept up by the same people through the period of a year under the shorter hours, it may safely be concluded that the increased speed was not "speeding" in the sense of an acceleration of production beyond a rate normally possible to the worker.

The 10% bonus introduced July 1, 1918, meant an increase in production corresponding to a wage increase of 30 cents per week, or .6 cents per hour in the two succeeding months, as compared with the two months previous. This increase is about 2½% per hour, a practically negligible amount.

HOURS AND OUTPUT IN THE GARMENT INDUSTRY.

The group of workers selected for an intensive study consisted of the buttonhole makers in a large garment factory. Facts which made a study of this department valuable are:

1. No conditions of personnel, labor turnover, character of work or sanitation have changed during the four-year period covered by the study.
2. Hours have been reduced from 54 to 49 weekly in the period from 1913 to 1917.
3. Wages have increased at each decrease in hours. If this had not been the case it might be supposed that employes would "speed up" in order to earn as much after as before the change in hours.
4. Buttonhole making is piece work and records on hours and output are therefore complete and available for study. All work studied was done by hand.

So far as can be learned by exhaustive questioning, none of the factory conditions, such as air, ventilation, degree of humidity, dust,

exhaust systems, light, noise, accident hazards, feeding, luncheons, sanitation in regard to drinking water, rest rooms, rest periods or pauses had undergone any changes of any kind during the period under investigation. There were no changes or improvements in education, instruction, incentives of any kind, discipline or supervision. No changes whatever were found in the nature of work, type of work, rates or age.

The piece rates in January, 1918, were 29.8% higher than in January, 1913. According to the cost of living series of the United States Bureau of Labor Statistics (page 17, No. 5, whole No. 228) the cost of food increased during the same period about 30%. It is therefore seen that better standards of living did not bring about increased productivity, since the increase in the cost of living during the four-year period from 1913 to 1917 was fully sufficient to absorb the increase in wages.

The number of buttonhole makers varies from 50 to 100 in this factory. The turnover is about 200% annually. The women who do this work are of a good grade of intelligence. The character of the working force has not changed during the years studied. The average age of these women is about 27 years, and this has not changed materially in the last five years.

In this work the months of January and July are at the height of the busy season. The slack season months sometimes show a low production because of an over supply of workers for the amount of material. The month of January was chosen for study because of the fact that production would be most even at that time.

The buttonhole on which rates are based is a standard buttonhole, and variations are referred to this standard to determine the rate of compensation. Thus, if a buttonhole requires half as much time and labor on the employe's part as the standard buttonhole, it is paid for at half the rate. Production figures in this study refer to the number of standard buttonholes. The quality of the material and the difficulty of the work have not changed in the four years from 1913 to 1917 to any perceptible degree. As no machinery whatever is used in the operation of making buttonholes, there could be no change in this respect.

Statements were made to the investigator by two responsible company officials, both of whom had been in office for five years. One stated that buttonhole production had increased enough to more than cover the decrease in hours; the other, that production had remained stationary and that the workers, of course, produced less in a 49-hour week than in 54. This fact again shows the need of analysis of actual figures before investigators can be sure of the effect of a shortening of hours.

Hours in the factory studied have decreased as follows:

May 1, 1915.....54 to 52 hours weekly
May 1, 1916.....52 to 49 hours weekly
Jan. 22, 1917.....49 to 48 hours weekly

This study covers the month of January, in 1913, 1914 and 1917. The rate changes during this period were:

May 1, 1913, a 10 per cent increase.
May 1, 1916, an increase of over 18 per cent.

Production was studied only in cases where workers put in full hours through a given week. Two studies were made, the first including those workers who spent full time through the entire four-week period studied in any one of the three years; and second, a study of all workers who put in full time during any one week out of the 12 weeks studied.

OUTPUT OF FULL TIME WORKERS UNDER DECREASING HOUR SCHEDULES.

	Total of workers.	Total buttonholes.	Number per worker.	Number per hour.
January, 1913	28	39,749	1,420	6.9
January, 1914	28	38,628	1,379	7.3
January, 1917	25	35,703	1,428	7.4

This table shows that in the four-year period from January, 1913, to January, 1917, the rate of buttonhole making for this group of workers, all of whom put in full time during the entire month of January, increased from 6.9 to 7.4 per hour per worker, and that the increase was more than sufficient to make production for the entire month in 1917 equal to that in January, 1913, in spite of the decrease in working hours of five hours per week.

In order to secure results for equal groups, three workers were eliminated from the 1913 and 1914 groups, in each case the two most skilled and the one least skilled of the group. The following table shows results.

OUTPUT OF EQUAL GROUPS OF WORKERS UNDER VARYING TIME SCHEDULES.

	Total of workers.	Total buttonholes.	Number per worker.	Number per hour.
January, 1913	25	34,870	1,395	6.8
January, 1914	25	33,962	1,358	7.3
January, 1917	25	35,703	1,428	7.4

It will be noted that the increase in rate of production in 1914 was not sufficient to attain a total production for the 52-hour week equal to that of the 54-hour week. An explanation of this is found in the fact that in the first two weeks of January, 1914, an unusually high proportion of unskilled workers entered this department, and a few of these put in full time during the month. But since it requires from five to six weeks for buttonhole makers to obtain maximum speed, the production records of these people bring down the average.

The effect of a large proportion of unskilled workers in 1914 is even more clearly shown when production figures are given for all workers putting in full time during any one week during the January months.

	Total number workers.	Total buttonholes.	Average number per worker.	Number per hour.
January, 1913	42	61,193	1,464	7.2
January, 1914	54	71,397	1,322	7.0
January, 1917	60	89,162	1,486	7.7

Records for the twelve individual weeks studied are as follows:

	Total number workers.	Total buttonholes.	Average per worker.	Number per hour.
January, 1913—(1)	42	12,400	295	6.9
(2)	43	16,444	375	6.9
(3)	39	15,544	399	7.4
(4)	43	16,805	384	7.1
January, 1914—(1)	59	15,909	269	6.6
(2)	51	17,235	338	6.8
(3)	52	18,794	361	7.5
(4)	54	19,549	362	7.5
January, 1917—(1)	53	20,290	383	7.8
(2)	63	23,407	371	7.6
(3)	62	23,475	379	7.7
(4)	62	21,990	355	7.7

In this table all workers put in full time during the given week. The influence of unskilled workers is clearly shown in the first two weeks of January, 1914, where the rate of production comes down to 6.6 and 6.8 per hour respectively. New workers who are unable to become fairly proficient ordinarily drop out after a week or two of work, so that the last two weeks in January, 1914, show a decided increase.

Figures for the smaller groups who worked full time throughout the months are:

	Total of workers.	Total buttonholes.	Average per week.	Number per hour.
January, 1913—(1)	28	7,979	288	6.8
(2)	28	10,452	373	6.9
(3)	28	10,630	380	7.
(4)	28	10,688	382	7.1
January, 1914—(1)	28	8,118	297	7.2
(2)	28	9,886	353	7.1
(3)	28	10,169	363	7.3
(4)	28	10,453	373	7.7
January, 1917—(1)	25	8,924	357	7.3
(2)	25	8,967	359	7.4
(3)	25	9,222	369	7.3
(4)	25	8,590	344	7.4

Attendance records for all buttonhole workers were studied to see whether attendance was materially better under shorter hours. It was found that attendance improved from 1913 to 1917, but not to a large enough degree to warrant any definite conclusions on the beneficial effect of fewer hours on attendance.

CONCLUSIONS ON THIS STUDY.

These figures conclusively show that the production rate in this department has increased so much that total output under a time schedule five hours less is equal to and even greater than production under the longer hours.

The investigator was told that the same conditions hold in other departments in the factory so that fewer workers are required for an

equal volume of production at present than was the case five years ago.

Health conditions have considerably improved in this factory during the past five years. The reduced hours have in the opinion of the factory health officer been a considerable factor in promoting health, in increasing content among the workers, and so in raising the rate of production.

CHAPTER VI.

OUTPUT DURING A WORKING DAY.

To determine the extent to which fatigue is a factor in reducing output at various stages of the working day, study was made of the dried beef canning room in one of the large packing plants. The conclusions of this study are:

1. The 10-hour day in this shop shows the presence of a considerable fatigue element.
2. This fatigue is indicated by depression in output during the hours nearest noon and the last hour of the day.
3. The foreman and superintendent explained the decreased output in the last hour of the day by the fact that the girls used a part of this time to "clean up" preparatory to leaving work. When asked why the workers used this time for this purpose, they said it was because they were tired of their work and of the monotony connected with it, and were in a hurry to get away.
4. The fatigue element is greatest among the workers who spend the full 10 hours in the canning room, with a half hour for lunch period.
5. Fatigue is less among workers spending 9 hours in the canning room and 1 hour in the cafeteria.
6. The 9-hour workers, in addition to producing more in 9 hours than the other group in 10, show slighter fluctuations in productive ability, indicating less fatigue. These conclusions bear out the statements of industrial investigators who believe that a change in occupation is in itself of the nature of a rest.
7. All evidence pointed to the conclusion that the hour worked in the cafeteria has a beneficial effect on the afternoon output of the 9-hour workers.

Records of 20 workers over a period of one week were taken to show the number of jars packed during each successive hour of the day. The total number of working days thus secured for study was 118. During this week each girl worked steadily on one type of jar, and there was no shortage in the supply of material.

The regulation working day in this department is 10 hours, beginning at 7 in the morning and ending at 5:30 in the afternoon, with a half-hour for lunch. Thirteen of the twenty girls, however, worked only nine hours in the canning room, spending one hour at noon in the factory cafeteria.

Dried beef canning is to be classed as light sitting work. Wages are comparatively high. The dried beef is taken in small pans from

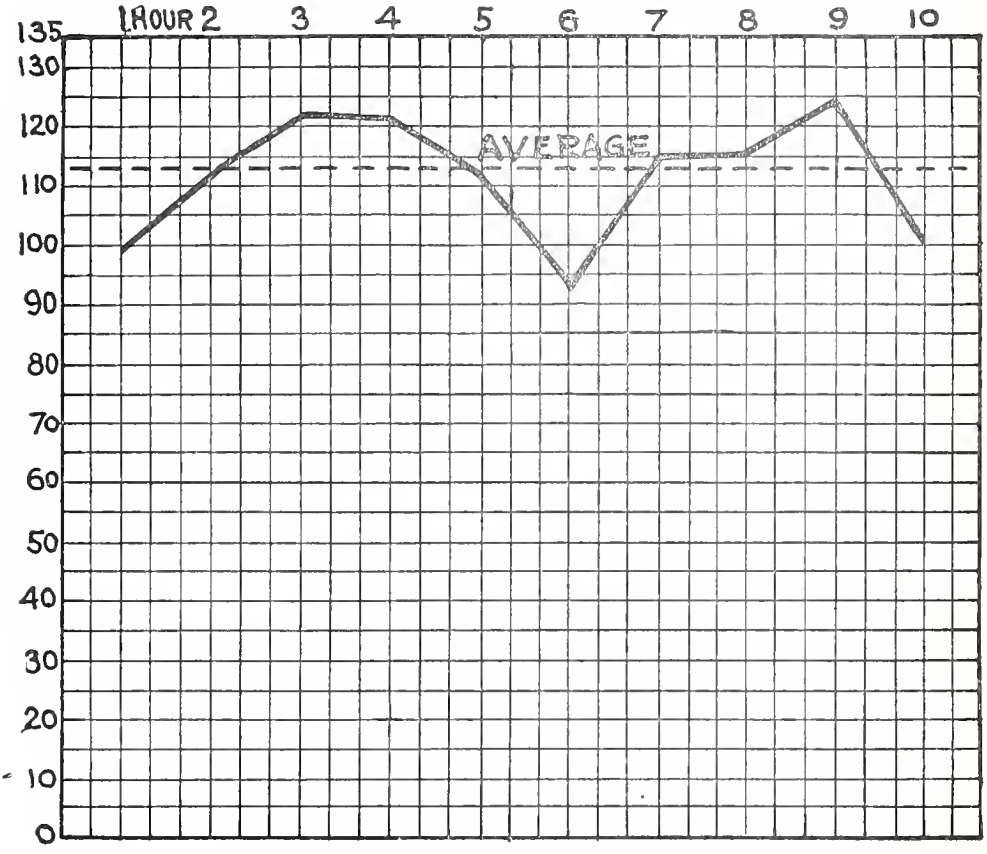
a moving belt which passes before the worker, and this beef is packed in small glass jars, which are periodically counted by a tally girl and sent on to be weighed and sealed. The girls doing this canning work belong to the higher grade of labor in the stock yards.

Three analyses of the work of these girls were made: (a) An output study for the entire department; (b) and (c) separate records for the two groups who worked in the canning room 9 and 10 hours respectively.

The following table and curve show total output, number of hours and average output per hour for each hour worked daily.

TABLE 25—OUTPUT BY HOURS DURING WORKING DAY—DRIED BEEF CANNING.

Hours.	Total output.	Number hours.	Average output.
7- 8	9,765	99	99
8- 9	13,240	118	112
9-10	14,435	118	122
10-11	13,935	115	121
11-12	12,245	109	112
12:30-1:30	2,895	31	93
1:30-2:30	10,680	94	114
2:30-3:30	10,935	95	115
3:30-4:30	9,260	75	123
4:30-5:30	7,385	73	101
Total	104,775	927	113



It will be seen that the workers increase in efficiency up to 10 o'clock, when there is a gradual falling off, with a sharp drop at the hour nearest noon. In the afternoon output tends to rise up to 4:30, but during the last hour of the day production again falls off. The curve fluctuated sharply, the highest point of production being about one-third more than the lowest point.

The extreme variations in output, together with the fall before the noon closing time, indicate considerable fatigue, due probably, in part at least, to the monotonous character of the work.

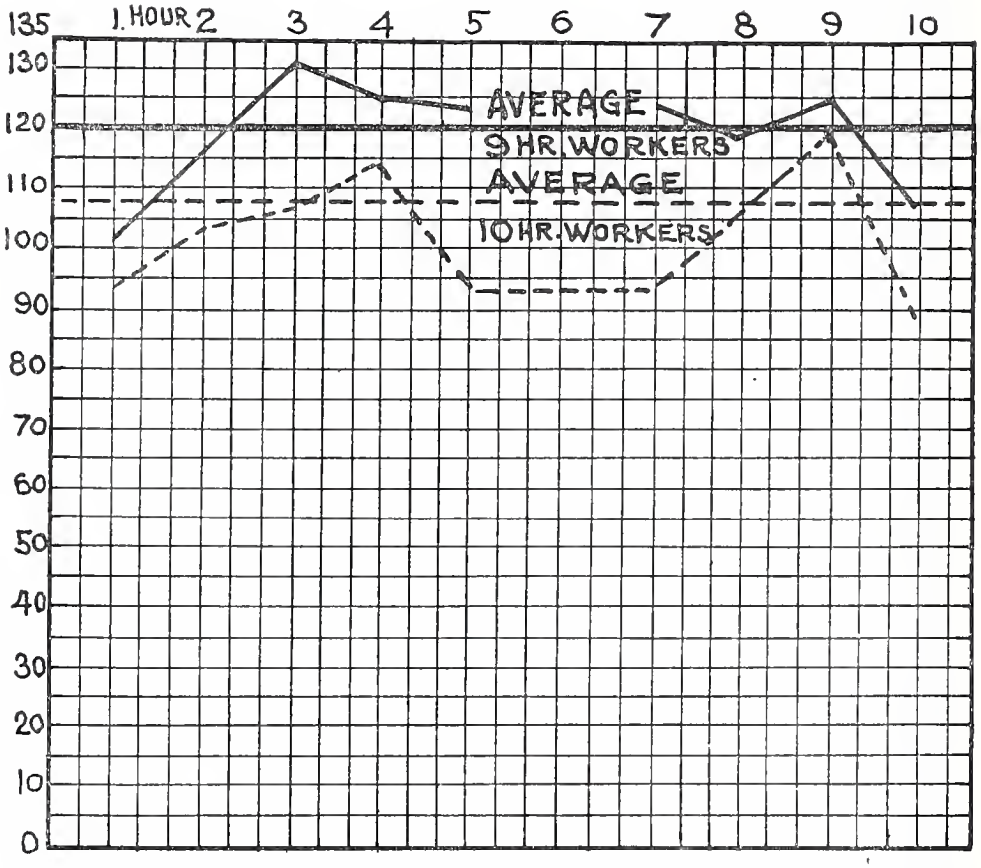
CAFETERIA WORK A RELIEF.

Noon work in the cafeteria is much harder physically than the dried beef canning. Distinction between the girls performing such work and those spending 10 hours in the canning room was made to determine whether the cafeteria period served as a relief to the monotony of the canning, thus aiding production, or, by unduly fatiguing the worker, tended to decrease production.

It was found that the 13 who worked in the cafeteria excelled in production the seven 10-hour workers during every hour of the day. This excess in hourly production was so great as to more than make up for the hour spent in the cafeteria. The 9-hour workers produced an average of 1,080 cans per day, while the 10-hour workers produced an average of 1,010 cans per day. Figures for total and average production per hour are as follows:

TABLE 26—HOURLY OUTPUT—9 AND 10 HOUR WORKERS, DRIED BEEF CANNING

Hours.	Ten-hour workers.			Nine-hour workers.		
	Total output.	Number hours.	Average output.	Total output.	Number hours.	Average output.
7–8	3,265	35	93	6,500	64	102
8–9	4,220	41	103	9,020	77	117
9–10	4,380	41	107	10,055	77	131
10–11	4,455	39	114	9,480	76	125
11–12	3,610	39	93	8,635	70	123
12:30–1:30	2,895	31	93	.....	.....	.....
1:30–2:30	2,775	30	93	7,905	64	124
2:30–3:30	3,330	31	107	7,605	64	119
3:30–4:30	2,885	24	120	6,375	51	125
4:30–5:30	2,025	23	88	5,360	50	107
Total	33,840	334	101	70,935	593	120



This table shows graphically the effect of changed work for one hour in the middle of the day. Not only does the productive ability of the 13 cafeteria girls exceed that of the seven 10-hour girls, but the level of production is steadier and the decrease is less in proportion. Moreover, no considerable decrease in output is noted at the end of the forenoon. Under the 10-hour day output fluctuates from 120 to 88 cans hourly, a variation of over 36%. The variation among the 9-hour workers is from 131 to 102 cans hourly, or only about 28%.

It may be suggested that the hour of standing work in the cafeteria might have a bad effect on the afternoon production of the 9-hour girls. In order to ascertain whether this is the case, a table was made out, showing average hourly production for the first four hours and the last four hours of the day for the two groups.

COMPARISON OF AFTERNOON AND FORENOON PRODUCTION—DRIED BEEF CANNING.

	First 4 hours.		Last 4 hours.	
	Ten hour.	Nine hour.	Ten hour.	Nine hour.
Monday	100	117	108	111
Tuesday	103	118	108	118
Wednesday	101	115	89	123
Thursday	105	119	106	124
Friday	114	127	104	121
Saturday	107	118	.....	.....
Average	105	119	103	119

It will be seen that the last four hours of the day produce slightly less than the first four hours for the 10-hour workers. In the case of the 9-hour workers this production is maintained, so that the afternoon production is exactly equal to the morning production.

A general comparison of the production curves of the 9 and 10-hour workers shows the following facts:

1. The 9-hour workers produce more in nine hours than the 10-hour workers in 10. With so small a group as has been taken here, some difference might be traced to the individual variations among the workers themselves.
2. The 9-hour workers fluctuate less in productive ability than the 10-hour workers. This must be taken as an indication of less fatigue, whether such fatigue is caused by the difficulty of the work or merely by its monotony.
3. Almost no depression in the curve of production in the middle of the day is observed for the 9-hour group. The rise in production is more rapid in the morning and the fall slighter in the last hour of the afternoon. These facts likewise indicate the beneficial effect of a change in occupation.

DAYS OF THE WEEK COMPARED.

An attempt was made to study the average output on separate days of the week, to see whether any perceptible influence of fatigue toward the end of the week could be observed.

	Ten hours.	Nine hours.	Total.
Monday	101	116	111
Tuesday	101	120	113
Wednesday	96	124	114
Thursday	103	125	115
Friday	105	124	117
Saturday	103	108	106
Average	101	120	113

Production per hour for the various days of the week holds fairly steady, showing a slight increase up to Friday and a decrease on Saturday, where only five hours are worked. Most of the increase in production between Monday and Friday is traceable to the group of nine-hour workers. The increased production during that period is 7%, as compared to the increase of only about 4% on the part of the 10-hour group. The Saturday production is less in both groups, showing a slightly greater fall among the nine-hour workers.

This comparison of the days of the week does not show any very definite results. In a general way, it may be stated that production keeps up fairly well through the various days of the week.

A final point which must be considered is whether this study shows any bad effect of hours as such, or whether it does not rather show the bad effect of one type of work continued throughout long hours, since all the girls studied worked ten hours a day in the packing plant.

Fatigue is shown in both groups. The difference lies not in the presence or absence of fatigue, but merely in its extent. In effect this study shows variations in output between a long and a short-hour day, as the cafeteria work was undoubtedly in the nature of a relief period from the steadiness and monotony of the dried beef canning.

CHAPTER VII.

FATIGUE IN SEASONAL INDUSTRIES.

Long hours in a seasonal industry are in the nature of a "spurt" for the individual worker, testing her power of keeping up an unusual effort over a relatively short period of time. The "season" varies in various industries, lasting from about five to about twenty weeks.

The two seasonal industries selected for analysis were the straw hat industry and the corn canning industry.

In both instances it was attempted to show the influence of cumulative fatigue (if any existed) on production. In each study the progress of fatigue was compared in short and long hour establishments in the same industry, to discover whether less effect of fatigue is noted in short hour shops.

FATIGUE AND PRODUCTION IN FOUR CORN CANNERIES.

The canneries of Illinois and other states have almost invariably protested against shortening hours for women on the grounds that the seasonal character of the trade, the perishable nature of the material, and the difficulty of getting help, make it impossible to institute a short working day. It is claimed by the advocates of the long day in the canneries that the shortness of the season makes it possible for workers to give the longer number of hours without unduly bad physical effects.

Study of the canneries was therefore undertaken to throw light on the actual amount of fatigue during the canning season, and the effect of the long hours worked on production and on the individual employe.

Request was made of 12 canneries that they send to the survey records for each day of their busy season covering the number of women workers employed, the number of male workers, the number of hours worked, and the amount of output.

Several of the canneries did not answer the request; several sent only average production, average number of hours worked, or average number of workers employed. Four replies gave data sufficiently complete to be analyzed by the survey. Of these

2 canneries, A and B, worked unlimited hours;

1 cannery, C, worked in three 5 hour shifts, each employe working 2 shifts or 10 hours per day.

1 cannery, D, worked 2 shifts, the first 8 hours, and the second whatever time might be necessary to finish the day's run. Women changed from the 2nd shift to the 1st and vice versa each week. The 2nd shift rarely worked more than 3 or 4 hours.

Conclusions from this analysis are:

1. In canneries A, B and C the maximum production per worker is reached in the 2nd week of the busy season, and from this time on there is a sharp drop in productivity, which reaches a minimum, toward the end of the season, of less than half the productive ability of the 2nd week.

2. In cannery D where 8 hours is the maximum per worker, the highest productivity is in the 4th week, and the worker's production keeps on a high level throughout the busy season.
3. While a direct comparison of output between factories is open to question, it is significant that the average production per hour is about one-sixth higher in cannery D than in any of the other three factories. This fact is sufficient to make the canning season more productive in cannery D under the 8 hour system than in either of the other 3 canneries, working 10 hours or more.
4. In interviewing employes in the canneries (see Chapter IV) it was noticeable that this industry furnishes the highest percentage of complaints of any into which field workers were sent.
5. The length of service among cannery workers is low (See Chapter IV) in spite of the fact that the population in these districts is relatively stable. The workers will not stay over from year to year, so that only about half of the employes in any one year will be likely to be found in the canneries the next season.
6. Officials of cannery D found that the problem of getting help is solved readily through the use of the shorter day. Its other economic advantages are too clearly shown by the figures following to require any emphasis here.

It is a matter of common knowledge that many canneries disregard the 10 hour law during the working season. This fact has been frankly admitted in hearings before legislative committees by cannery officials themselves. These canneries prefer to pay their fines if necessary in order to keep their factories open for the long hours which they believe are required to take care of the product. The possibility of a double shift is rejected by these men, mainly on the score of lack of help.

Output per hour of the women workers in four canneries is shown by Table 27.

TABLE 27—OUTPUT (CANS) PER HOUR—FOUR CORN CANNERIES.

Week.	A Unlimited hours.	B Unlimited hours.	C Two 5-hr. shifts out of three.	D One of two 8-hour shifts.
1	161.8	92.2	125.9	147.5
2	169.6	110.6	181.4	148.4
3	143.7	98.8	168.7	154.5
4	113.9	87.2	153.8	172.4
5	94.5	78.	109.3	157.3
6	87.5	84.3	71.4	114.2
7	108.	57.2	70.7	122.2
8	94.7	44.7	.....	.....
Maximum	169.6	110.6	181.4	172.4
Minimum	87.5	44.7	70.7	114.2
Week of maximum	Second	Second	Second	Fourth
Week of minimum	Sixth	Eighth	Seventh	Sixth
Difference between maximum and minimum.	82.1	55.9	110.7	58.2
Percentage, minimum of maximun.	48.4	40.4	39.	66.2
Average production per hour	121.7	81.6	125.9	145.2

Cannery B is seen to have a rate of production much lower than that of canneries A, C or D. This is explained by the fact that the organization in cannery B is different from that of the other three plants. Here women are employed on a number of processes which in other plants are cared for by men. It is probable that cannery B's output should be increased by about 15 per cent to make it directly comparable with the others.

Direct output comparison between firms, however, is not a reliable index of fatigue. In this study the important thing is not the higher absolute productivity of Cannery D, significant as that may be, but the steady maintenance of production throughout the busy season.

It will be seen that workers in Cannery D keep up their production very much better than workers in any of the other three factories studied. In this plant the minimum output is comparatively high, representing about two-thirds of the maximum output, as opposed to less than half in the other three canneries. The maximum production per hour comes late in the busy season in cannery D.

The units of output are No. 2 cans of corn, weighing 20 ounces each. While it is always unsafe to make direct comparisons between one cannery and another, it is significant that Cannery D has by far the highest average production per hour of the four canneries studied. Most significant, however, is the comparison within each cannery of its own variation in productivity in the course of the busy season.

A partial check to the numerical facts brought out by this study is found in the report of a field worker on the visit to Cannery D. The employes here were reported in good condition, having few complaints, enjoying the work. In the other canneries complaints were almost universal and employes frequently said that it would not be possible to stand the work if it lasted longer than about eight weeks.

It is noticeable that this study bears out a tentative conclusion of the survey that the presence of fatigue is indicated by an exceedingly fluctuating output. The production held far steadier in Cannery D than in either of the other two. There seems to be no question but what this steadiness of output indicates a greater reserve of energy and so, less fatigue on the workers' part.

Table 28 shows the average output per hour for each day of the busy season.

Each of the four canneries shows an initial rise in productive ability as the season opens. This rise, however, in steadiest and best maintained in the case of Factory D. It is worth noting that three of the days of highest production in Cannery D (257.4, 284.9 and 208.0) were short days on which only 4 hours were worked. The day producing 165.0, toward the end of the busy season in Cannery D. is a day of 4¾ hours. In Cannery C the day of highest production (213.9) is also a short day.

TABLE 28—OUTPUT (CANS) PER HOUR PER DAY—FOUR CORN CANNERIES.

Day.	A Unlimited hours.	B Unlimited hours.	C Two 5-hour shifts out of three.	D One of two 8-hour shifts.
1	101.1	77.3	40.2	75.9
2	138.6	102.	160.6	219.3
3	159.8	93.8	146.2	136.9
4	173.4	117.6	198.	152.8
5	193.3	119.	189.	139.5
6	169.2	103.4	186.7	152.3
7	180.7	112.6	153.6	156.5
8	165.4	78.5	191.	138.8
9	161.8	110.9	166.3	153.5
10	173.1	93.8	179.7	168.3
11	174.8	100.6	178.8	159.2
12	158.2	103.7	155.7	140.7
13	149.4	103.2	171.5	156.7
14	154.8	87.8	142.4	140.5
15	143.8	104.2	176.2	160.3
16	142.8	87.4	167.2	257.4
17	109.9	103.	213.9	243.6
18	142.	96.	166.	284.9
19	97.7	75.6	145.7	166.
20	105.5	70.8	132.8	149.
21	103.	76.6	121.3	151.1
22	120.	82.8	106.5	153.5
23	142.8	72.2	155.5	139.
24	85.7	86.4	105.3	208.
25	90.9	88.8	105.8	179.6
26	92.	102.5	98.4	165.4
27	106.5	74.9	72.3	154.6
28	106.9	96.7	69.5	107.7
29	85.4	95.	100.9	100.9
30	81.5	90.2	60.4	106.8
31	80.7	66.2	72.7	119.7
32	83.1	62.2	68.4	119.6
33	98.5	55.2	.....	120.2
34	92.3	56.6	.....	165.
35	95.6	54.7	.....	123.8
36	100.6	56.6	.....	96.6
37	120.2	52.1	.....	.....
38	114.6	37.7	.....	.....
39	117.3	.....	.....	.....
40	103.8	.....	.....	.....
41	94.7	.....	.....	.....
42	96.5	.....	.....	.....
43	94.4	.....	.....	.....
44	91.7	.....	.....	.....
45	86.4	.....	.....	.....

PRODUCTION AND HOURS IN THE HAT INDUSTRY.

The hat industry is almost wholly a seasonal trade. During the slack season there are few workers and short hours. During the busy season hours are lengthened and the number of workers is greatly increased. Power machine operation in making straw hats is very well paid during the busy season. The average wage is apt to be over $20 weekly, and experienced operators will earn from $35 to $60 in a week. The busy season for straw hats lasts from ten to twenty weeks in various shops.

The busy season in making straw hats was studied in two large factories, A and B. The study led to the following conclusions:

1. There is a definitely bad effect of Sunday work on production in a machine trade such as that of hat making. This depression of production is shown not only in the week during which Sunday is worked, but also in the week immediately following, and seems to be attributable only

to fatigue on the part of the workers. The need of a one day rest in seven is here clearly shown.

2. An increasingly bad effect on production is shown when long hours are worked steadily. Under a 66 hour week there is an initial rise in productive ability showing increased practice and skill, and then a progressive decrease in production. Its extent shows that even for a short "busy season" it is not well to require as much as 66 hours per week of work.
3. The 54 hour week does not produce a depression in production to as great an extent as a 60 hour week. Even in this week, however, after 2 continuous Sundays have been worked a depression in production is found. Two short weeks with the opportunity for rest, which they give seem to enable workers to display even more vigor in their work and cause an increase in productive ability which keeps up till the end of the busy season.
4. Power machine operators in hat factories frequently do not work except during the busy season in the hat industry. It may therefore be supposed that they come to their work with more vigor than would be the case with workers under an equal week the year round.
5. An element tending to produce an upward trend in productive curves for both factories in the first part of the study (that including all workers at power machines) is that inexperienced girls, "learners," become more experienced and hence more productive toward the end of the busy season. That this is not a large factor is shown by results for the smaller group of experienced workers, where the curves of production are substantially the same as these for the whole group.

The following outline shows general conditions in each of these two factories:

	Factory A.	Factory B.
Average number of employes (busy season)	150	215
Length of busy season	21 weeks.	10 weeks.
Slack season hours—Daily	8	9
Weekly	44	54
Busy season hours—Daily	9	10
Weekly	54	66
Sundays worked	4 in all.	All except Easter.
Holidays worked	3	Easter only.
Hours worked on Sunday	6	6

In other words, the employes at Factory A worked an average of 12 hours a week less than those in Factory B, during the busy season.

This study was made to see whether individual production records for each week during the busy season showed any considerable falling off due to fatigue. If a girl can earn an average of $20 weekly for the first five weeks of the busy season, and after that earns only $15 weekly, the influence of fatigue is shown in her lessened production,

except where other factors enter to decrease production artificially. Such factors were not found in either of the two factories studied.

In each factory study was made of (1) all the working force using power machines, and (2) of a smaller group of about fifty steady experienced workers. The wage was taken as indicative of output. The output in dozens of hats was also studied at Factory A. Results were somewhat similar to results on wages, but the curve of production in dozens was not used, since the types of hats made vary so much that a dozen of one may be equal to two dozen of another in time and difficulty of manufacture. The wage gives a fairly exact measure of production in this industry.

Table 29 shows production during the busy season in factories A and B.

TABLE 29—PRODUCTION (WAGE) FACTORY A, BUSY SEASON 1917—HAT INDUSTRY

Week.	Date.	Number workers.	Average week wage.	Hours worked per week.	Average hour wage.	Remarks.
1..	End Nov. 25, 1916	138	$14 85	54	27.5c	
2..	End Dec. 2, 1916	145	13 76	45	30.6	Thanksgiving holiday.
3..	End Dec. 9, 1916	157	20 89	54	38.7	
4..	End Dec. 16, 1916	159	19 63	60	32.7	Sunday worked.
5..	End Dec. 23, 1916	159	18 63	54	34.5	
6..	End Dec. 30, 1916	160	18 61	45	41.1	Christmas holiday.
7..	End Jan. 6 1917	157	19 89	51	39.	New Year holiday. Sunday worked.
8..	End Jan. 13, 1917	155	21 71	60	36.2	Sunday worked.
9..	End Jan. 20, 1917	158	20 35	54	37.7	
10..	End Jan. 27, 1917	154	19 18	54	35.5	
11..	End Feb. 3, 1917	151	18 63	54	34.5	
12..	End Feb. 10, 1917	152	14 70	45	32.7	Three short days. Shortage of material
13..	End Feb. 17, 1917	154	17 13	54	31.7	
14..	End Feb. 24, 1917	154	19 75	54	36.6	
15..	End Mar. 3, 1917	152	22 36	54	41.4	
16..	End Mar. 10, 1917	152	21.61	54	40.1	
17..	End Mar. 17, 1917	149	23.54	54	43.6	
18..	End Mar. 24, 1917	145	22.38	54	41.4	
19..	End Mar. 31, 1917	143	22 98	54	42.6	
20..	End April 7, 1917	143	24 90	60	41.5	Sunday work. Shortage of material.
21..	End April 14, 1917	140	17 77	54	32.9	
	Average.....	151	$19 69	53.4	36.9c	

PRODUCTION (WAGE) FACTORY B, BUSY SEASON 1918—HAT INDUSTRY.

Week.	Date.	Number workers.	Average week wage.	Hours worked per week.	Average hour wage.	Remarks.
1..	End Feb. 9, 1918	181	$17 19	60	28.7c	No Sunday work.
2..	End Feb. 16, 1918	198	20 37	66	30.9	
3..	End Feb. 23, 1918	207	27 02	66	40.9	
4..	End Mar. 2, 1918	215	25 68	66	38.9	
5..	End Mar. 9, 1918	221	28 03	66	42.5	
6..	End Mar. 16, 1918	225	24 53	66	37.2	
7..	End Mar. 23, 1918	223	24 32	66	36.8	
8..	End Mar. 30, 1918	214	22 14	66	33.5	
9..	End Apr. 6, 1918	206	19 69	60	32.8	No Sunday work.
10..	End Apr. 13, 1918	187	13 17	66	20.0	
	Average.....	207.7	$22.214	64.8	34.28c	

It will be noted (Factory A) that there is a reduction in production per hour during each week when Sunday was worked. Week 4 shows a reduction of 5.3c per hour, and week 20 a reduction of 1.1c per hour. Even more significant is the fact that production during the weeks after a week of Sunday work (5, 9 and 21) does not show a recovery in production rate to the standard of the previous weeks (3, 6 and 19).

Weeks 12, 13 and 21 are not strictly comparable to the others, for week 21 is at the close of the busy season, when work begins to slacken, and during weeks 12 and 13 there was a shortage of material which led to three 6 hour days of work in week 12, and a lessened production in week 13.

In general, however, the curve of production tends to rise through the busy season, showing that for this group of workers there is no perceptible depression of productive ability due to a 54 hour week. (See Curve A, Figure 1).

.It will be noted that the peak of production in the first half of the busy season in Factory A comes at the 6th week. After a depression in production caused by the 2 Sundays worked in weeks 7 and 8, the curve of production does not rise, but rather tends slowly to fall. After the 2 short weeks (numbers 12 and 13) caused by lack of material, production in Factory A rises until in weeks 15 to 20 it is held at a much higher level than the maximum in the first part of the busy season.

The probable explanation for the gradual depression from weeks 6 to 13 is cumulative fatigue, and the rise after the 13th week may be explained by the fact that the 2 short weeks gave the employes a chance to rest and recuperate from the steady work.

In Factory B, the busy season was shorter than in Factory A, and the time worked per week averaged 11.4 hours more, or nearly two hours daily. The table shows a general increase in productivity from the first week to the 5th, and after that a steady fall in the workers' ability to produce. All the evidence indicates that the fall in production is due to increasing fatigue, except in week 10, where the lessening amount of material and orders may have kept down production.

Curves showing graphically the results of Table 29 are found in Figure I. It must be remembered that as rates are different in Factories A and B, no direct comparison can be made between the curves. It was somewhat remarkable that the average wages per hour should be as similar as has been found the case.

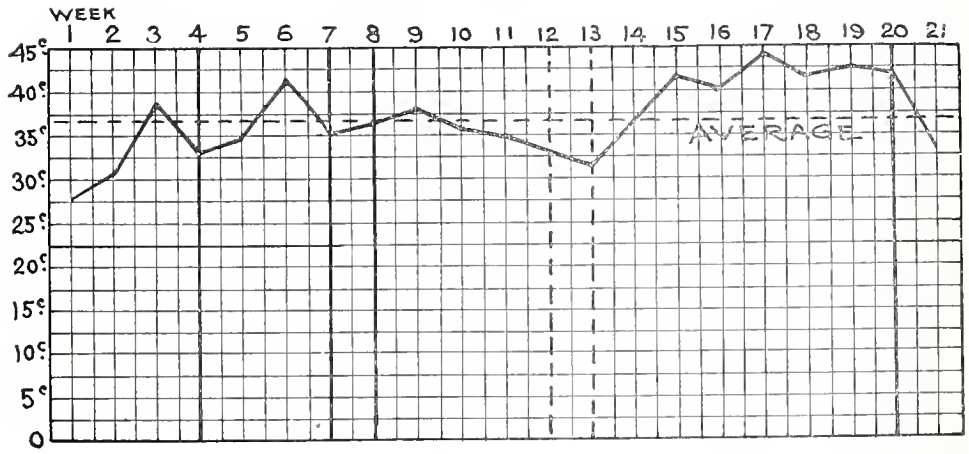
A comparison of these curves will clearly indicate a downward tendency in "B" due to fatigue. The long hours begin to tell on production after about the 5th week, and after that we find a steadily decreasing rate of output. And this is true despite the fact that at the beginning of the busy season inexperienced workers are taken on, and these would naturally become more productive as they became more experienced.

The second study made in these factories eliminates the factor of the inexperienced workers, and deals with a group of 52 workers in

FIGURE I—HOUR RATE OF PRODUCTION DURING EACH WEEK OF BUSY SEASON—HAT INDUSTRY.

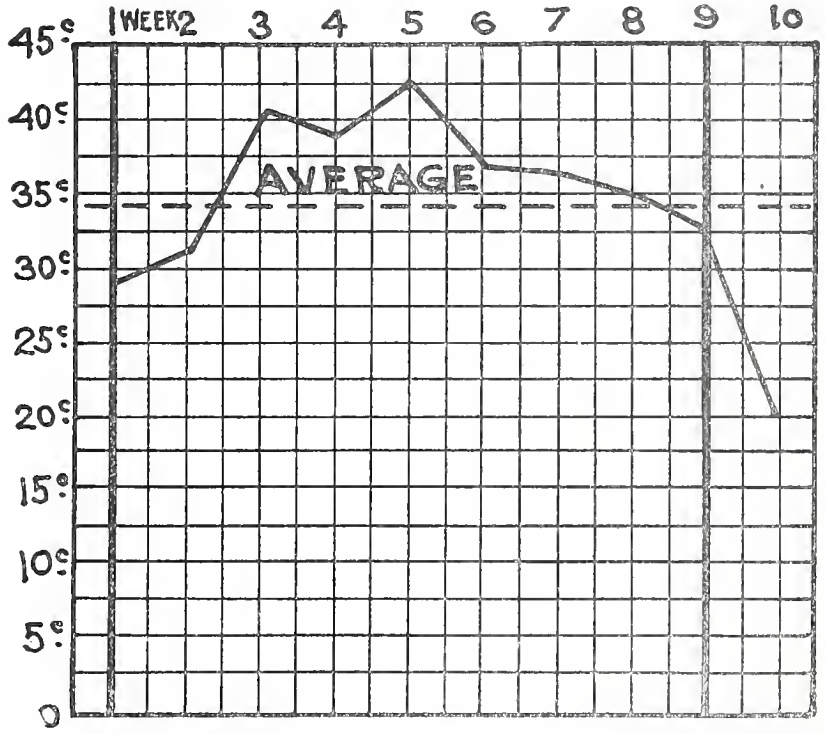
ALL EMPLOYES—SEWING HALL.

FACTORY A



Vertical unbroken lines indicate weeks in which Sunday work was done
Vertical broken lines indicate weeks in which there was some shortage of material.

FACTORY B.



Vertical lines indicate weeks during which Sunday work was not done.

A and 45 in B who were selected as steady, experienced operators. Table 30 and Figure II show results for these people.

TABLE 30—PRODUCTION (WAGE). STEADY EXPERIENCED GROUP OF WORKERS —HAT INDUSTRY.

FACTORY A—BUSY SEASON, 1917.

Week.	Date.	Number workers.	Average wage per week.	Number hours worked.	Average hourly wage.	Remarks.
1..	Ending Nov. 25	43	$20 80	54	38.5c	
2..	Ending Dec. 2	47	19 01	45	42.2	Thanksgiving holiday.
3..	Ending Dec. 9	50	28 60	54	53.	
4..	Ending Dec. 16	52	26 26	60	43.8	Sunday worked.
5..	Ending Dec. 23	52	25 27	54	46.8	
6..	Ending Dec. 30	51	24 82	45	55.2	Christmas holiday.
7..	Ending Jan. 6	52	27 56	51	54.	New Year holiday and Sunday worked.
8..	Ending Jan. 13	52	28 36	60	47.3	Sunday worked.
9..	Ending Jan. 20	52	26 86	54	49.7	
10..	Ending Jan. 27	50	25 15	54	46.6	
11..	Ending Feb. 3	52	25 14	54	46.6	
12..	Ending Feb. 10	52	19 00	45	42.2	Three short days. Shortage of material.
13..	Ending Feb. 17	52	22 95	54	42.5	
14..	Ending Feb. 24	52	26 36	54	48.8	
15..	Ending Mar. 3	51	29 85	54	55.3	
16..	Ending Mar. 10	52	27 44	54	50.8	
17..	Ending Mar. 17	51	30 52	54	56.5	
18..	Ending Mar. 24	52	28 84	54	53.4	
19..	Ending Mar. 31	52	29 48	54	54.6	
20..	Ending April 6	52	31 36	60	52.3	Sunday worked.
21..	Ending April 13	52	21 47	54	39.8	
	Average.....	51.0	$26.028	53.4	48.7c	

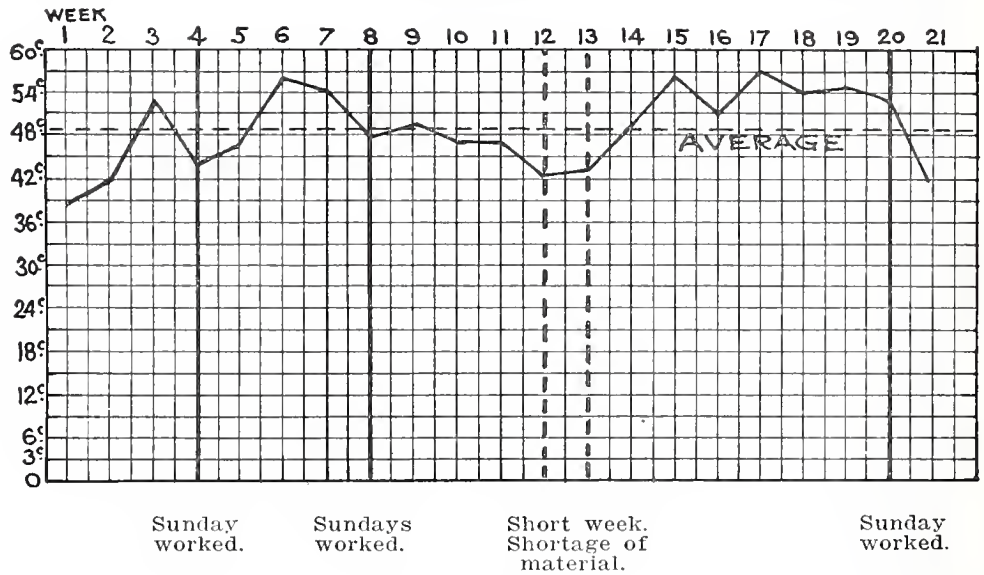
FACTORY B—BUSY SEASON, 1918.

Week.	Date.	Number workers.	Average wage per week.	Number hours worked.	Average hourly wage.	Remarks.
1..	Ending Feb. 9	40	$18 86	60	31.4c	No Sunday work.
2..	Ending Feb. 16	42	24 31	66	36.8	
3..	Ending Feb. 23	45	34 10	66.	51.7	
4..	Ending Mar. 2	45	32 94	66	49.9	
5..	Ending Mar. 9	45	35 26	66	53.4	
6..	Ending Mar. 16	45	31 11	66	47.1	
7..	Ending Mar. 23	45	30 51	66	46.2	
8..	Ending Mar. 30	45	28 58	66	43.3	
9..	Ending April 6	45	23 63	60	39.4	No Sunday work.
10..	Ending April 13	43	15 88	66	24.1	
	Average.....	44.0	$27.518	64.8	42.5c	

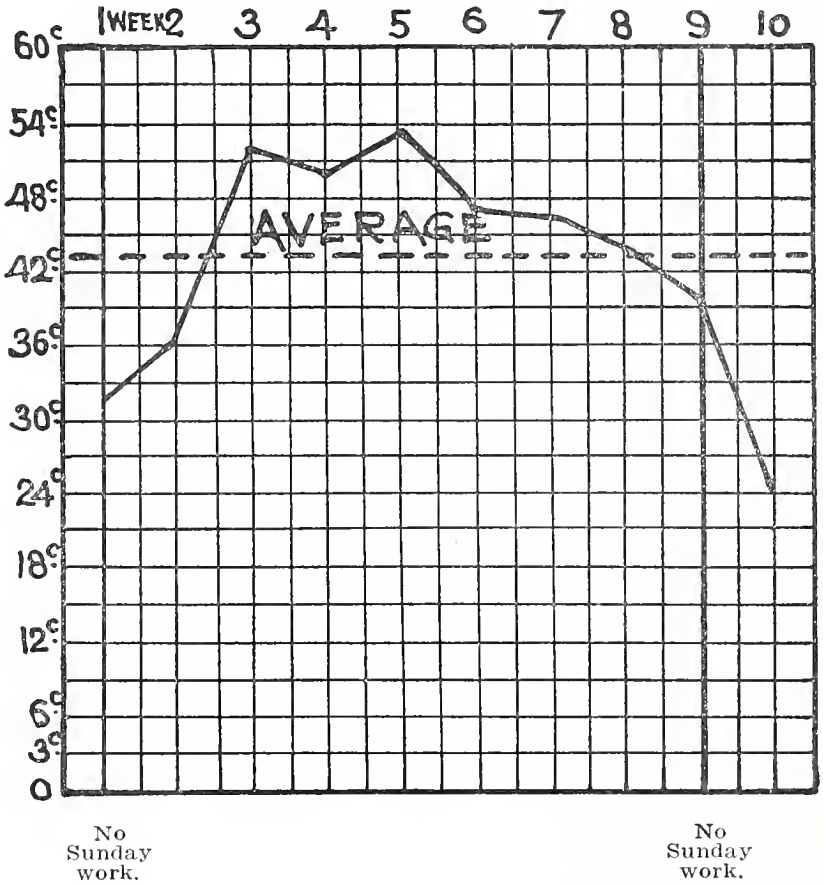
These tables, together with Figure II, giving results graphically, present much the same conclusions as those where the entire working force was considered. Here again a depression of rate of production follows Sunday labor in Factory A. Here again production decreases steadily after week 5 in Factory B.

FIGURE II—HOUR RATE OF PRODUCTION DURING EACH WEEK OF THE BUSY SEASON—HAT INDUSTRY. STEADY EXPERIENCED EMPLOYES.

FACTORY A



FACTORY B.



CHAPTER VIII.

HOURS AND ACCIDENTS.

Industrial accidents were studied to discover to what extent fatigue resulting from long hours is a causal factor, and how it compares with such other factors as length of service, amount of output and so forth.

In the literature on hours and accidents two conflicting types of evidence appear to be presented.

(1) "It is indisputable in fact that the more fatigued a worker is the more liable he is to accidents. * * * The number of accidents increases progressively from hour to hour in each of the two working periods, forenoon and afternoon." (From a report of the Divisional Factory Inspector, Paris, 1906.)

(2) "Apparently the accident rate is a complex product, dependent on a variety of factors, concerning which we have as yet little information. One factor which probably has a very marked influence is the rate of production. It is a truism that the faster a machine operates, other things being equal, the greater the danger of accident from it. * * * It is safe probably to offer as a provisional hypothesis that the immediate cause of a variation in the accident rate through the hours of the day is the varying rate of activity. Fatigue then comes in as an important secondary factor, serving sometimes to increase the accident rate, sometimes to decrease it." (Senate Document, No. 645, 61st Congress, 2nd Session, 1911.)

One group of investigators, notably those of an earlier period, claims that accidents vary directly with hours, increasing toward the close of a working period. According to this group, the last hour in the morning and the last hour in the afternoon are the hours in which the highest proportion of accidents occur.

Another group of investigators, represented by the second quotation, finds that the accident rate varies through the hours of the day roughly with the rate of output. The hours in which the worker is producing at highest speed are the hours which produce most accidents. The last hour in the morning and the last hour in the afternoon are comparatively "non-productive" hours, both for accidents and the material results of labor.

Three general analyses of accidents were made by the survey.

1. A study of 1,560 accidents to about 3,000 women employed in a large Chicago packing plant.
2. A study of 403 accidents to about 500 women employed in an Illinois knitting mill.
3. A study of 391 accidents to 7,630 women employed in 88 Illinois firms.

These accidents were studied to show:

A. Distribution through hours of the day.
B. Distribution through days of the week.
C. Distribution through the year.
D. Frequency of accidents according to length of employment.

Conclusions of this study are:

1. The accident rate in every instance studied appears to vary with the rate of production, being highest when production is highest, and lowest during the hours of lessened production.
2. No significant variation in number of accidents for the days of the week or months of the year appears from the study.
3. All indications point to the conclusion that the length of employment bears an inverse ratio to the number of accidents. Employes of 6 months and under, representing not more than 35 per cent of the total working population, account for 60 per cent of the industrial accidents.
4. The two factors most directly making for accidents appear therefore to be speed of production and length of employment. It is possible—indeed it has been fairly well established by other investigators— that the factor of fatigue enters in to increase the number of accidents in a given long-hour day, rather than to increase the number of accidents, sustained in any given hour of such a day. This conclusion could not be investigated by the survey for lack of suitable records in firms where hours have been reduced, and on account of the presence of other factors, such as large number of new employes, etc., where records were found adequate.

ACCIDENTS IN PACKING PLANT.

Accidents were recorded over a period from October, 1916, to August 16, 1918, in a large Chicago packing plant. During this time there were 1,560 accidents to the women employes in this plant, who numbered from about 1,300 in January, 1917, to 3,000 in July, 1918.

The rate of accidents in this firm is high, being 4 accidents per month for each 100 women employed. Variations in rate of accidents are shown by the following table:

TABLE 31—ACCIDENTS TO WOMEN IN A CHICAGO PACKING PLANT, BY MONTHS.

Month.	Number of accidents.	Average number of women employed.	Rate per 100 women employed.
November, 1916	70	1,381	5.07
December, 1916	51	1,361.5	3.75
January, 1917	56	1,290.75	4.34
February, 1917	46	1,320.5	3.48
March, 1917	66	1,453	4.43
April, 1917	62	[1]1,516	4.59
May, 1917	67	1,623.4	4.00
June, 1917	59	1,595.25	3.11
July, 1917	56	1,550.75	3.78
August, 1917	55	1,536.6	3.60
September, 1917	50	1,650.5	3.59
October, 1917	68	[1]1,948.	3.38
November, 1917	79	2,148.6	3.64
December, 1917	69	2,185.25	3.16
January, 1918	55	2,135	2.58
February, 1918	83	1,842.75	4.50
March, 1918	75	[1]1,879.5	3.99
April, 1918	101	2,162	4.67
May, 1918	126	2,375.6	5.32
June, 1918	120	2,734.75	4.39
July, 1918	132	2,996.25	4.41
Entire period	1,546	38,686.95	4.00

[1] Only three weeks given. For the fourth week an average of the preceeding and succeeding weeks was used.

Most of the increase in the number of new employes comes between March and July, 1918. During this period also there is a distinct rise in the number of accidents. This indicates that new workers are considerably more liable to accidents than workers of more experience.

Table 32 shows a distribution of accidents by days of the week.

TABLE 32—INDUSTRIAL ACCIDENTS IN A CHICAGO PACKING PLANT, BY THE DAYS OF THE WEEK.

Days of the week.	Number of accidents.	Per-centage.	Days of the week.	Number of accidents.	Per-centage.
Monday	259	16.6	Friday	287	18.4
Tuesday	272	17.5	Saturday	262	16.8
Wednesday	258	16.6			
Thursday	219	14.1	Entire period	1,557	100.

This table shows Friday as the day most productive of accidents. There is not sufficient variation between the days, however, to make this finding significant.

Final analysis of packing plant accidents attempts to show at what hour in the day these accidents are heaviest. For this purpose a base of 1,309 accidents was used, excluding 251 where the hour of the day was not given (as in cases of infection, etc., or where accidents occurred during night shifts).

TABLE 33—INDUSTRIAL ACCIDENTS IN A CHICAGO PACKING PLANT, BY HOURS OF THE DAY.

Hour.	Number of accidents.	Per-centage.	Hour.	Number of accidents.	Per-centage.
6:30– 7:29	49	3.7	1:30– 2:29	137	10.4
7:30– 8:29	111	8.5	2:30– 3:29	117	9.
8:30– 9:29	139	10.6	3:30– 4:29	102	7.8
9:30–10:28	169	13.	4:30– 5:29	71	5.4
10:30–11:29	158	12.1	5:30– 6:29	27	2.
11:30–12:29	115	8.8			
12:30– 1:29	114	8.7	Entire period	1,309	100.

The high point for the day is in the hour from 9:30 to 10:29, or the hour of greatest productivity on the part of the worker. The afternoon peak is in the hour from 1:30 to 2:29, again a period of good production. The number of accidents steadily decreases toward the end of the day, falling to a comparatively small number in the hour from 4:30 to 5:29, which is for most of the workers the closing hour of the day. In this plant, then, the accident rate is clearly shown to follow the rate of production.

ACCIDENTS IN A KNITTING MILL.

A large knitting mill in Illinois showed a high percentage of accidents for its employes, over three accidents per 100 workers per month. These accidents seem fairly evenly distributed over the various months. Distribution by hours of the day follows:

TABLE 34—ACCIDENTS IN A KNITTING MILL, BY HOURS OF THE DAY.

Hour.	Number of accidents.	Per-centage.	Hour.	Number of accidents.	Per-centage.
7 A. M.	7	4.5	2 P. M.	25	15.9
8 " "	37	23.6	3 " "	14	8.9
9 " "	19	12.1	4 " "	6	3.8
10 " "	15	9.5	5 " "	3	1.9
11 " "	7	4.5			
12 M.	13	8.3	Entire period	157	100.
1 P. M.	11	7.0			

This distribution of accidents by hours shows the same conclusions as were found in Table 33. The productive hours are the accident hours, and the non-productive hours produce fewer accidents. The peak of production and accidents in this plant comes earlier in the day than in the packing plant. This may be explained by the fact that the work in this shop is exceedingly fatiguing, and that the girls probably reach their maximum of production early in the day.

INDUSTRIAL ACCIDENTS IN 88 FIRMS.

Accident records from 88 Illinois firms for the 6 months from March to September, 1918, were analyzed. Two distributions of these accidents were made, (a) by hours of the day, and (b) by length of experience of the worker. In records of 391 accidents, 271 showed the precise time at which the accident occurred.

TABLE 35—INDUSTRIAL ACCIDENTS IN 88 FIRMS, BY HOURS OF THE DAY.

Hour.	Number of accidents.	Per-centage.	Hour.	Number of accidents.	Per-centage.
6:30- 7:29	1	.4	1:30-2:29	26	9.6
7:30- 8:29	11	4.	2:30-3:29	26	9.6
8:30- 9:29	30	11.1	3:30-4:29	15	5.5
9:30-10:29	64	23.6	4:30-5:29	27	10.
10:30-11:29	33	12.2	5:30-6:29	2	.7
11:30-12:29	19	7.			
12:30- 1:29	17	6.3	Entire period.	271	100.

In these firms the last hour of the day seems slightly heavier in accident rate than in the two previous analyses, and the third hour of work (9:30 to 10:29) is considerably higher in proportion to the other hours. In general however, the relative position of the hours as productive of accidents remains unchanged.

In this study it was possible to analyze accidents according to the length of employment of the individual sustaining the accident. Table 36 shows results:

TABLE 36—INDUSTRIAL ACCIDENTS IN 88 FIRMS BY EMPLOYES—LENGTH OF SERVICE.

Length of service.	Number of accidents.	Per-centage.
Under 1 month	79	23.6
1 month and under 2 months	43	12.9
2 months and under 3 months	20	6.
3 months and under 4 months	26	7.9
4 months and under 5 months	21	6.2
5 months and under 6 months	10	3.
6 months and under 7 months	16	4.8
7 months and under 8 months	8	2.4
8 months and under 9 months	14	4.2
9 months and under 10 months	6	1.8
10 months and under 11 months	2	.6
11 months and under 1 year	1	.3
One year and over	88	26.3
Total	334	100.

It will be seen that the first month is responsible for nearly one-fourth of all the accidents, the second month for about 13% and the next months for less than 8% each. Here the relative danger of the first month of employment is clearly seen.

The increased numbers of accidents reported under "6 months", "8 months", and "a year and over", are probably due to the fact that these are convenient terms to use in estimating an employe's length of service. Probably many workers who had been in their positions for 10, 11 or even 9 months were estimated as having been employed for a year. An exact analysis would probably eliminate several from the three groups listed above.

It was possible to compare the proportion of accidents in length of service groups with the length of service of about 5,000 employes as reported in the General Field Study, (Chapter IV). This comparison shows even more clearly the greater susceptibility to accidents of the inexperienced worker.

TABLE 37—ACCIDENTS AND LENGTH OF SERVICE.

Length of service.	Proportion of accidents, 88 firms. Per cent.	Proportion of employes Chicago. Per cent.	Proportion of employes Illinois. Per cent.
Under 6 months	59.6	34.7	34.9
6 months and under 1 year	14.1	12.2	7.4
1 year and over	26.3	53.1	57.7
Total	100.	100.	100.

The "under 6 months" group is about 35% of the total in Illinois, both in and out of Chicago. It contains about 60% of all accidents in the 88 firms studied.

CHAPTER IX.

PRODUCTION IN THE NIGHT SHIFT.

At the outset of every discussion of the topic of night work, it must be borne in mind that from the standpoint of the human machine, night work is always abnormal.

Man is a diurnal animal and needs the effect and stimulus of light and sunlight and the accompanying atmospheric conditions. The temperature and physiologic processes exhibit a normal regular curve of variation, with a maximum rise of temperature in the afternoon and a minimum in the early morning hours. Any attempt to change these habits must interfere with normal physiological processes.

Comparison between the productive ability of the night and the day shift was made in the machine folding department of a large printing plant. Factors which make the findings of this study significant are:

1. The night shift worked ten hours while the day shift worked only nine.
2. The night shift worked only five nights per week, making a total of 50 hours per week, while the day shift worked half a day on Saturday, making its total weekly hours the same as those of the night shift.
3. Records were kept in this factory on production per shift per day, and also a record of the total number of "productive hours" worked during the given shift.
4. The night workers had been kept steadily on night work for eight or nine months previous to the time when the study was made. Both night and day shifts were composed of workers of a fairly high grade of experience and ability.

The period covered by this study was eleven weeks, from March 9, 1918 to May 23, 1918. The number of workers in the day shift varied from 18 to 30, and in the night shift from 6 to 10.

Results of this study show:

1. Day workers produce an average of 4,409 pieces per hour while night workers produce an average of 3,892 pieces per hour or about 13% less than the day workers.
2. In a week of equal length the excess of the amount produced by the average day worker over that produced by the average night worker was 15,892 pieces, or about 8½%.
3. Working ten hours as compared with the day workers nine, the average production per night was only about 2% more than the day production although the time was longer by 11 1-9%.

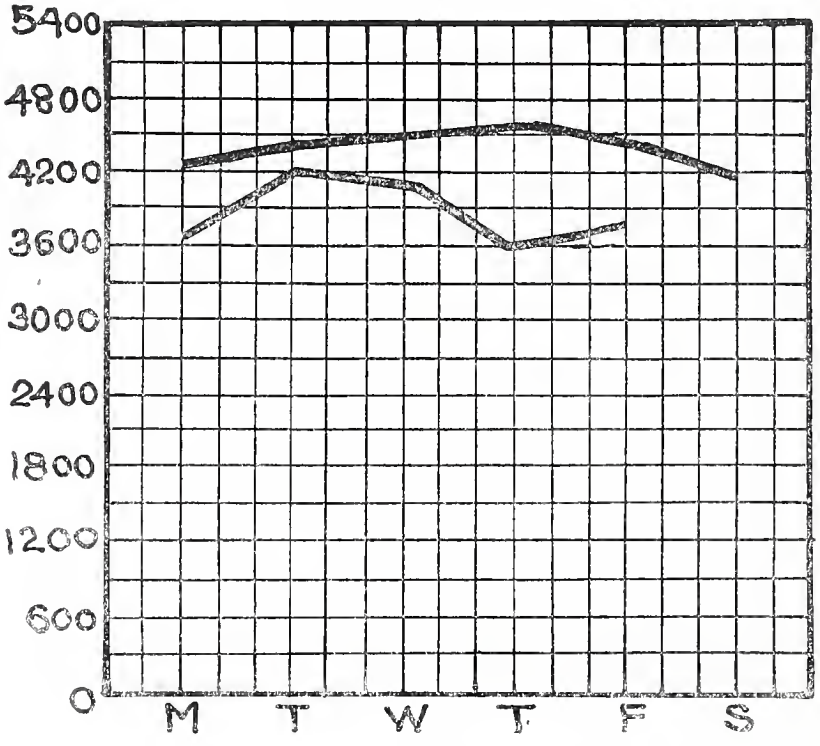
4. The comparison of production through the days of the week shows that day workers increase steadily in productive ability up to Thursday and then fall slightly in output on Friday and Saturday. The night workers, however, reach their maximum production per hour on Tuesday night and sustain a considerable drop in productive ability during the last three days of the week.

The following table and curve show productive ability per hour for each day of the week in the night and day shifts, respectively:

TABLE 38—AVERAGE HOURLY PRODUCTION—PRINTING INDUSTRY.

	Night shift.	Day shift.		Night shift.	Day shift.
Monday	3,668	4,279	Friday	3,764	4,458
Tuesday	4,233	4,410	Saturday	.....	4,203
Wednesday	4,180	4,510			
Thursday	3,612	4,605	Week	3,892	4,409

FIGURE I.



The day shift is productive of 517 pieces per hour more than the night shift, an excess of about 13% over the night workers. That this excess is, in part at least, due to the conditions of the workers and not to individual variations among the workers, is apparent from the fact that the maximum production for the night workers comes on Tuesday, while the day workers increase in production up to Thursday of the average week, sustaining only a slight drop on

Friday. Less capable workers might produce less while maintaining an even rate, but where the rate decreases so sharply from an early peak there is indisputable evidence of cumulative fatigue.

Production for a Saturday, where only half a day is worked, is in this, as in all other special studies of hours and output, found to be poor. Even on Saturdays, however, the day workers produce more per hour than the night workers on any night of the week except Tuesday.

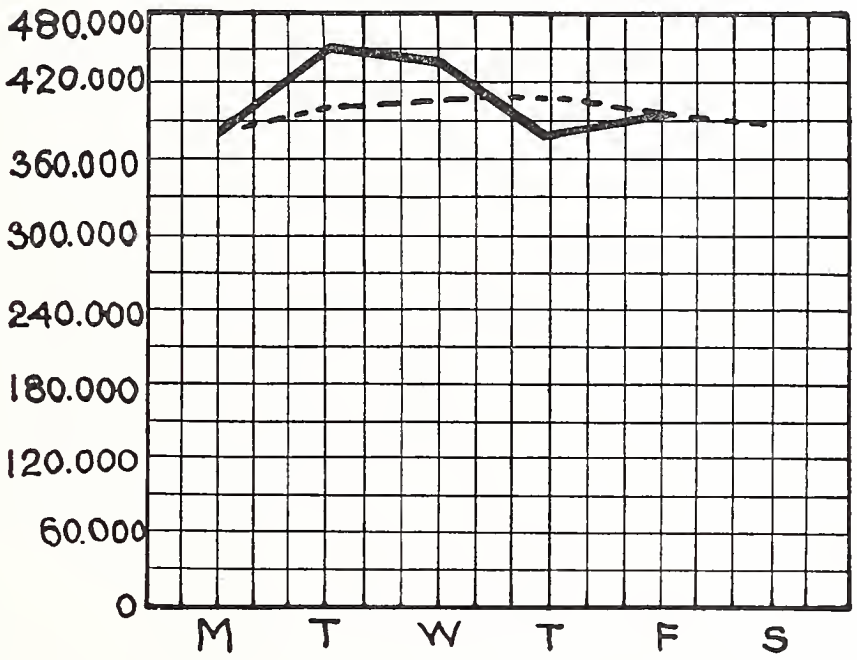
The average production per day for the day and night shifts, respectively, is shown by the following table and curve:

TABLE 39—AVERAGE DAILY PRODUCTION—ELEVEN WEEKS, 1918—PRINTING INDUSTRY.

	Day shift.		Night shift.	
	Total.	Average.	Total.	Average.
Monday	386,957	35,178	385,477	35,043
Tuesday	405,644	36,877	456,047	41,459
Wednesday	413,609	37,601	442,094	40,190
Thursday	416,102	37,827	380,784	34,617
Friday	402,484	36,589	403,033	36,639
Saturday	[1]392,067	35,642	.....	.....
Week	2,416,863	203,841	2,067,435	187,949

[1] Saturday production has been multiplied by 9/5 in order to make this figure comparable with those for other days.

FIGURE II.



The average production per night is about 2% more than the day production, although the night time was over 11% longer than day. The curve of production here shows again the sharp variation

in production on the different nights of the week, the output reaching its maximum for the night workers on Tuesday and falling sharply on Thursday and Friday, and the day production keeping steadily at a higher level through the week.

In addition to greater steadiness of output, the day workers during a week (equal in length to the number of hours worked by the night shift) produce about 8½% more pieces (day workers average 203,841 pieces, night workers average 187,949 pieces).

It is an interesting question whether sharp fluctuations in productive ability of themselves indicate fatigue. Fatigue in this study is clearly shown by—

1. An early maximum in night production.
2. A drop in output from Tuesday on.
3. A total output less than that of the day workers.

But does the single fact that night production varies far more than day production, indicate that fatigue is present to a greater degree?

In several special fatigue studies it was found that long-hour workers tend to fluctuate more in hourly or daily output than workers under shorter hours. It would seem that this is a normal phenomenon. The athlete who is running unevenly, lagging at some moments and speeding up at others, is judged fatigued. The same influence might well cause spurts and drops in a worker's productivity, or even in the output of an entire group, such as the night shift studied here.

No other studies definitely establishing this hypothesis are known to the survey. Further analysis will be important.

APPENDIX A.

THE ACT CREATING THE ILLINOIS INDUSTRIAL SURVEY.

An Act to provide for the creation of a commission for the study of the conditions of industry in which women are engaged, to be known as the Illinois Industrial Survey, and defining the powers and duties thereof, and making an appropiation therefor.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That there is hereby created a commission of seven members for the purpose of studying the conditions of industry in which women are engaged as workers, to be known as the Illinois Industrial Survey, two of whom shall be employers of labor industry in which women are employed, two of whom shall be representative of women workers in industry, one a person interested in social problems, not known to be a representative of either labor or capital, and two of whom shall be persons who have had a medical education and are not distinctly representatives of either labor or capital, all of whom shall be appointed by the Governor to hold office as members of said commission until the convening of the Fifty-first General Assembly, at which time said commission shall go out of existence. The Governor shall designate the chairman of the commission.

SECTION 2. It shall be the duty of such commission to make a complete survey of all those industries in Illinois, in which women are engaged as workers, with special reference to the hours of labor for women in such industries, the effect of such hours of labor upon the health of women workers, and to make a report to the Governor not later than December first (1), 1918, for transmission to the Fifty-(first) First General Assembly, with the recommendations if any, of the commission.

SECTION 3. The commission shall have power to employ such clerks and assistants as may be necessary and to fix their compensation and may incur such other expenses as are properly incidental to the work of the commission. It shall have power to administer oaths and to take the testimony of witnesses, necessary for this Act.

SECTION 4. The expense of said commission, including a reasonable per diem to the members thereof not to exceed ten dollars per day for the time actually spent in such investigation, shall be paid out of funds to be appropriated for that purpose, upon vouchers drawn upon the Auditor of Public Accounts, properly itemized and certified to by the chairman of the commission and approved by the Governor.

SECTION 5. The sum of ten thousand (10,000) dollars, or so much thereof as may be necessary, is hereby appropriated for the expenses of the commission, and the Auditor of Public Accounts is hereby authorized to draw his warrants for the foregoing amount or any part thereof, in payment of any expenses, charges or disbursements, authorized by this Act, properly itemized and certified to by the chairman of the commission and approved by the Governor.

Approved June 22, 1917.

APPENDIX B.

ANALYSIS OF STATE LAWS.

State.	Hours per day.	Hours per week.	Industries to which the law applies.	Overtime.	Exemptions.	Night work.
California (1917)...	8	48	Mfg., mech., mere., laundries, hotels, hospitals, p l a c e s of amusement, restaurants, telegraph, telephone, express and transportation companies	None permitted	Graduate nurses and canneries. The California Industrial Welfare Comm. has power to regulate work and wages in the canneries and has permitted a 9-hour day; 9–12 hrs. time and quarter wages; and double time for all overtime above 12 hrs. per day	No regulation
District of Columbia (1915)..	8	48 (6-day week)	Mfg., mere., laundries, hotels, telegraph and telephone companies	None permitted	No exemptions	No regulation
Arizona (1913).....	8	56	Mere. est., confectionery stores, bakeries, laundries, hotels, restaurants, telephone and telegraph companies	10 hrs., 1 day in 6-day week for mere. and candy stores	Telephone and telegraph companies employing not more than 3 women, and nurses	No regulation
Colorado (1912)....	8	56	Mfg., mere., mech., laundries, hotels and restaurants	None permitted	No exemptions	No regulation
Montana (1917).....	8	56	Mech., mfg., merc., telephone, telegraph, laundries, hotels and restaurants	Holiday season (1 wk.) 10 hours day	No exemptions	Not more than 8 hrs. in any 24. Total 8 hrs.
Nevada (1917).....	8	56	Mfg., mech., mere., laundries, hotels, places of amusement, restaurants, express or transportation companies	None permitted	Canneries, nurses and student nurses	Not over 8 hrs. in 24, or 56 per wk.
Washington (1911).	8	56	Merc., mech., laundry, hotel, restaurant	None permitted	Canneries	No regulation
Arkansas (1915)....	9	54 (6-day week)	Mfg., mech., mere., laundries, express and transportation companies	Within a 90-day period, at t i m e and half rates when especially exempted by a Commission	No exemptions	No regulation

Kansas (1915)..... Regulated by the State Indus. Welfare Com.	9	54 Except in public housekeeping	Laundries, mercantile establishments, public housekeeping	None permitted	No exemptions	Merc. est.—women may not be employed after 9 p. m.
Maine (1915).....	9	54	Factories, mfg., mechanical establishments, workshops, laundries 54-hour week—telephone companies employing more than 3 operators, stores and mech. est., restaurants, telegraph, offices, express or trans. companies.	1 wk. prior to Christmas and Easter—stores over 9 hrs.; wk. not to exceed 54 hours.	Public service in case of emergency	No regulation
New York (1918)...	9	54 (6-day week)	Factories (includes bakeries, confectionery stores and laundries), merc., messenger service, restaurants	Holiday week in stores, and 10-hr. day in factories, week not to exceed 54 hours.	Canneries from June 15 to Oct. 15, may work 10 hrs. per day; 60 hrs. per wk. The N. Y. Indus. Board may permit a 12-hr. day and a 66-hr. or 6-day week. in restaurants and hotels, performers, attendants in cloakrooms and parlors, or employes in lunch rooms	Prohibited in merc. est., messenger service and factories between 10 p.m. and 7 a.m. and in restaurants between 10 p. m. and 6 a. m. (Exempt)
Ohio (1917).....	9	54 (6-day week)	Factories, workshops, telephone, telegraph companies, millinery, dressmaking, restaurants, distributing or transmission of messages, merc. establishments	Merc, est.. Saturday 10 hours	Canneries	No regulation
Texas (1915).....	9	54	All establishments	Laundries 11 hrs. double pay for all over 9 hrs. not to exceed 54-hr. week. Cotton and worsted mills, 10 hr. double pay for over 9 hrs., 60 hrs. per week. Extraordinary emergency, double pay for overtime.	Stenographers and pharmacists	No regulation
Utah (1911).....	9	54	Mfg., merc., mech., laundries, hotels, restaurants, telegraph or telephone companies, hospitals, offices, express and transportation companies	None permitted	Emergency in hospitals or elsewhere	No regulation

APPENDIX B—Continued.

State.	Hours per day.	Hours per week.	Industries to which the law applies.	Overtime.	Exemptions.	Night work.
Michigan (1915)....	9 av. 10 max.	54	Factories, mills, warehouses, workshops, mfg., laundries, stores, shops, mercantile, office and restaurants	1 hour (see hours per day)	Canneries	No regulation
Minnesota (1913)...	9 10	54 58	10-hr. and 58-hr. wk.—merc, restaurants; 9-hr. and 54-hr. wk.—mech. and mfg.; 9-hr. and 54-hr. wk.—in cities, telegraph and telephone	On Saturdays in stores 11 hrs.; week not to exceed 50 hours	Canneries	No regulation
Missouri (1909).....	9	54	Mfg., mech., merc., factories, workshops, laundries, bakeries, restaurants, places of amusement, stenographic or clerical work in any of the above, transportation, public utility, common carrier, and public institutions	None permitted	Canneries not to exceed 90 days per year. Telegraph and telephone	No regulation
Nebraska (1913)....	9	54	Mfg., mech., merc., laundries, hotels, restaurants, offices, and public service corporations	None permitted	No exemptions	No work between 10 p. m. and 6 a. m., except in Pub. Serv. Corp.
Idaho (1913).....	9	63	Mech., merc., laundries, hotels, restaurants, telegraph and telephone, express and transportation companies, office	None permitted	Canneries	No regulation
Oklahoma (1915)...	9	63	Mfg., mech., merc., laundries, bakery, hotel, restaurant, office bldg., warehouses, telephone companies, office painting estb., bookbinding, theaters, shows or places of amusement in cities and towns of 5,000 and over	Telephone in calamity disaster, or epidemic with consent of operators and to be paid double time. (2) restaurants, in case of emergency 10 hours, double time paid	Registered pharmacists, stenographers and nurses	No regulation

Massachusetts (1916).....	10	54	Factories, or workshops, mfg., mech., merc., telegraph and telephone companies, express and transportation companies	Seasonal indust. may work 58 hrs. if average for year is 54	No exemptions	Prohibited in mfg. est. between 10 p. m. and 6. a. m. and in textile mfg. between 6 p. m. and 6 a. m.
Pennsylvania (1913)	10	54 (6-day week)	All establishments	Lost time or legal holidays—not to exceed 60-hr. week.	Canneries and nurses in hospitals	All estb. except mfg. prohibited 9 p. m. to 6 a. m. Mfg. 10 p. m. to 6 a. m. Exempted—telephone operators, steneg. in factories
Rhode Island (1913)	10 in cons. 24	54	Factory, mfg., mech., business, mercantile and laundries	None permitted	No exemptions	No regulation
Delaware (1913)....	10	55 (6-day week)	Merc., mech., mfg., laundries, bakeries, printing est., telephone and telegraph companies, restaurants, hotels, places of amusement, dressmaking est., offices	May work 12 hrs. in one day if total hours for week do not exceed 55 hours	Canneries	(1) If working between 11 p. m. and 7 a. m. not more than 8 hrs. in any 24 (2) Night work is prohibited betw. 10 p. m. and 6 a. m. in mech., mfg., laundries, bakeries, offices, printing and dressmaking
Wisconsin (1917)...	10	55	Mfg., laundries, mech., merc., restaurants, confectionery stores, telegraph and telephone cos., express and transportation	None permitted	Pea canneries	Night work since 1917 regulated by Indust. Comm. not to exceed 8 hrs. in 24
Connecticut (1913).	10	55 mfg. & mech.; 58 in merc. est.	Mfg., mech., merc., and laundries	Holiday season in stores	No exemptions	No work after 10 p. m.
Kentucky (1912)....	10	60	Laundries, bakeries, factories, workshops, merc. estb., mfg., meeh., hotels, restaurants, telephnoe and telegraph	None permitted	No exemptions	No regulation

State.	Hours per day.	Hours per week.	Industries to which the law applies.	Overtime.	Exemptions.	Night work.
Louisiana (1916)...	10	60	Mills, factories, mines, packing houses, mfg. and workshops, laundries, millinery, dressmaking or merc. estb. employing more than 5 persons, theaters, music halls, places of amusement where intoxicating liquors are sold. Bowling alley, bootblacking estb., freight or passenger elevators, telegraph and telephone companies	Stores and mechanical estb. on Saturday nights	No exemptions	No regulation
Maryland (1916)....	10	60	Mfg., mech., merc., printing, bakeries and laundries	Saturdays and holiday season in stores	Canneries	Limited to 8 hrs. if any part of work is done between 10 p. m. and 6 a. m.
New Jersey (1912)..	10	60 (6-day week)	Mfg., merc., bakery, laundry and restaurants	Mercantile, Christmas season	Canneries	No regulation
Oregon (1917) *....	10	60	Mfg., mech., laundry, hotel, restaurant, telegraph, telephone, express or transportation companies	None permitted	Canneries, with time and half pay for all time over 10 hrs.	No regulation
Wyoming (1917)....	10	7-day wk. 60 hrs.; 6-day wk. 52 hrs.	Mfg., mech., merc., printing, bakery, laundry, cannery, hotel, restaurant, theater or place of public amusement.	None permitted	No exemptions	No regulation
Virginia (1918).....	10	70	Factory, workshop, laundry, mercantile, and manufacturing establishments	None permitted	Mercantile estb., in towns of less than 2,000	No regulation
Illinois (1911).....	10	70	Merc., mech., factories, laundries, hotels, restaurants, telephone, telegraph companies, places of amusement, express, transportation or public utilities, common carriers, and public institutions.	None permitted	No exemptions	No regulation

New Hampshire (1917).....	10¼	54	Manual and mechanical	Merc. estb.—Holiday season (week)	Nurses, domestics, hotels, telephone and telegraph companies, and farm labor	8 hrs. in 24; 48 per week if between 8 p. m. and 6 a. m.
Vermont (1912)....	10½	56	Mine, quarry, mfg., mechanical	None permitted	No exemptions	No regulation
Tennessee (1914)...	10½	57	Any workshop or factory	10½-hr. day permitted for purpose of providing 1 short day per week	Canneries	No regulation
South Carloina (1916).....	11 12	60	Cotton and woolen mills—11 hours; mercantile establishments—12 hrs.	Cotton and woolen mills, 60 hrs. per annum; make up lost time	No exemptions	Mercantile estb. probib. after 10 p. m.
Indiana (1899).....	.....	.....	.....	.....	.....	Night work in mfg. estb. is prohib. between the hrs. of 10 p. m. and 6 a. m.

* The Oregon Industrial Welfare Commission has made the following rulings up to date:
9-hour day—Except in canneries (10 hours).
54-hour week—Except in offices, woolen mills and canneries (10 hours).
Portland offices—51-hour week.
Portland mercantile establishments—8:2 per day, 50-hour week.

APPENDIX C.

FORMS USED.

1. Questionnaire used in collecting data from employers.
2. Questionnaire used in collecting data from employes.
3. Questionnaire used in collecting data from industrial physicians.

FORM 1.

Date.....

Industry .....

Name of Firm.....

Address .....

(Street and City.)

Number of female employes who

1. Are under 16 years old.....
   Are 16 years old and over.....

Total Female Employes.....

2. Work 10 hours a day .....
   Work 9 hours a day and less than 10 .....
   Work 8 hours a day and less than 9 .....
   Work less than 8 hours a day.....

Time of—starting work.....stopping work.....

3. Work overtime .....
   Work Sundays .....
   Work nights .....

4. Total hours
   Worked each week.....
   Overtime .....per day.....per week.....
   Sundays .....
   Nights .....

5. Holidays and Rest
   How many allowed holidays.....
   How many holidays a year.....
   How many allowed Saturday afternoon off.....
   How long for luncheon.....
   Time allowed in rest periods.....

Please list months of busy season.....

Will you kindly furnish the Survey copies of any reports or studies of this character which have been made in your industry?

Name and address of Company physician.....

Remarks: .....

.....

Filled out by.....

Title .....

FORM 2.

Date.....

Industry .....

Firm .....

Address .....

Employe's Name..... { Age..... Single?..... Married?..... Children.....How many?.....

Address .....

Employed as .....
(Title or position.)

Department .....

Is this your only employment?.....

How long in present position?.....

How many hours work?.....Starting time.....Stopping time.....

Each day .....

Each week .....

How many hours overtime each day?.....

Each week? .....

Time allowed you for luncheon each day.....

Time allowed you in rest periods each day.....

Do you work Saturday afternoon?.....

Do you work Sundays?.....per month.....

Do you work nights?.....

How many holidays were you allowed past year?.....

Do you sit at work?.....

Do you stand at work?.....

Nature of work.....

Remarks: .....

.....

.....

FORM 3.

Name..... Office Address.....

Physician for.....Company. Length of service.....years

Address of Company.....

Nature of Business.....

Number of women employes. { Office..... { Over 16..... } Total.....
Shop..... { 16 and under.... }

1. What are the standard hours of work for women under your supervision? .....

   Per day now.....
   1 year ago.....
   2 years ago.....
   5 years ago.....

   Per week now.....
   1 year ago.....
   2 years ago.....
   5 years ago.....

2. What other conditions, if any, have changed during the past five years, so as to affect the health of women employed under your supervision?

3. Do you require a physical examination of applicants for work? How long has this been the case?

4. If you keep health records of all women employes, or of those applying for medical aid, please enclose copy of record cards used.

5. What illnesses can, in your opinion, be traced most directly to any effect of long hours on the health of working women?

6. What illnesses are most usual among the women who come under your care?

7. Have you observed any bad effect of long hours on health, or any good effect when hours have been reduced for the women workers under your supervision? If so, please report in detail your conclusions and the basis on which they were reached. Have you, or could there be gathered, figures to support your conclusions?

8. Has the length of the working day any effect on the maternal functions of workers?

9. What, in your opinion, is the best length for the working day and week for women in industry?..... Why?.....

10. Should there be a maximum length?..... What?.....

11. Would you be willing to collect data bearing on this subject for the Survey, or would it be possible for us to collect data bearing on relation of hours to health, in the company with which you are connected?

12. What is the relation, if any, of length of hours to industrial accidents?

MINORITY REPORT.

We do not concur in the report signed by the majority of the Illinois Industrial Survey, because:

(1) While it is true that the "Laws of the various states show a definite tendency toward the shorter work-day for women," there is no evidence that this tendency follows the conviction that the longer work-day affects the health of women. It is in fact admitted that while "many hour-regulating laws have been enacted, few have been the result of a thorough and definite study of actual conditions." Without such study it is impossible to say what causes the enactment of the laws. Certainly the conclusion is not warranted that they were enacted as health measures. Even if this were not so, and the assumption were warranted that a shorter day contributed to better health of women workers, still there is no evidence to justify the recommendation of a maximum week of forty-eight hours and a maximum day of eight hours, for it is admitted that only two states provide for the former and seven for the latter. Few, if any, of these states are industrial states. Oregon, for example, can hardly be considered an industrial state when compared with Illinois. The manufacturing output of Oregon is about three-fourths of one per cent of that of the entire United States; that of Illinois is twenty-two and twenty-seven one-hundredths per cent.

(2) "The practice among Illinois employers to shorten hours" and the fact that "a large proportion of employers are at present using shorter hours than the maximum permitted by law," can not justify the conclusion that hours of labor should be further restricted by law. On the contrary, they may be cited as evidence that no such restriction is necessary for obviously that which is granted by voluntary consent of citizens need not be required by statute.

(3) That which is offered as evidence of industrial physicians is largely an expression of opinion; this opinion being based on no definite experience or facts, is naturally conflicting and confusing. It is admitted in the report of the majority that the opinion of industrial physicians "is not backed by actual statistical data." The relation of hours to maternal functions will serve as an example of the conflicting and confusing character of this evidence. Of forty-one industrial physicians, eleven did not answer; ten said that they did not know; eleven had observed no bad effects, and eight thought that hours had a bad effect on the health of women workers. We believe that this evidence is inadequate to warrant any conclusion.

(4) The evidence of employes as offered is incompetent. It must of necessity be colored by the worker's personal reaction to her particular job. She either likes her job or does not; and will complain about her hours of work or will refrain from complaint accordingly.

This in evidenced by the fact that a very considerable percentage even of those who work the minimum number of hours complained that their hours were too long. Besides it is hearsay evidence transmitted through field investigators likely to be influenced by their prejudices and sympathies.

(5) Much is made in the report of the relation of hours to labor turn-over. We believe, and it is generally known, that labor turn-over is affected by methods of employment, earnings, physical shop conditions and many other factors, more than by hours. To these other factors no consideration has been given by the survey. Without such consideration, we believe that no conclusion as to turn-over is justified.

(6) Employers generally contend that a reduction of hours involves decrease of output. Employes generally hold to the same view. This is evidenced by the fact that almost invariably when hours are reduced, a proportionate increase in piece rates is demanded and allowed. In the face of these facts, data from three factories are hardly adequate to prove the contrary. Particularly is this so when in two instances these data are at variance with information given investigators by company executives. It may be said further that the experience of one operation out of perhaps forty operations in the garment industry, or that of fifty workers out of eight thousand workers, should not have been used as the basis for determining output. We shall return to the further consideration of these data later.

(7) The study of the dried beef canning room in one of the large packing plants does not justify the conclusions drawn. Both groups of girls in this plant worked ten hours, even though one group worked one hour of the ten in the restaurant. The inference is inevitable that other factors and not apparent differences in hours contributed to the increased output of this group. One of these factors may have been as suggested by the report, "individual variations among the workers themselves." Another factor may have been the change from one occupation to the other; but in no event can the difference in output be credited to a difference in working hours, for there is none. The only conclusion warranted by these circumstances is that intermediate recess periods are desirable. The length or frequency of such periods is in nowise indicated by the evidence.

(8) The special study made of seasonal trades proves nothing. There is no allowance made for differences of management and the varying degrees of efficiency thereof between the factories reported. Mr. P. Sargent Florence, in his "Study of Industrial Fatigue," published by the United States Public Health Service, puts it thus: "If compared directly the hourly output of one factory against the hourly output of another factory, even on exactly the same process, might demonstrate nothing more than superior machines, superior foremen, and superior materials in the one as against the other." In support of our contention that no allowance has been made by the investigators for such differences, we point to the fact that a comparison between hat shops "A" running fifty-four hours, and "B" running sixty-six hours, if made by the investigators, would have developed evidence to the effect that shop "A" uses more modern methods and more intelli-

gent management, and that these factors of themselves, would account for the differences in the output.

(9) We believe that if "whenever hours have been shortened, so many other factors enter that it was impossible to make valid comparisons of accidents in working days of varying lengths," then there is no reason to suppose that the varying factors could be segregated or eliminated so that valid comparisons of fatigue could be made in working days of varying lengths. This belief is supported by the "Study of Industrial Fatigue" already quoted. Mr. Florence points out that changes in hours require many incidental rearrangements; that the field for "the before and after comparison" is strictly limited; he recommends the hourly output curve for determining evidence of fatigue; this method provides for hourly output tests in a given factory on a certain day or during several successive days, within a limited period. Only by such a test can all variables be eliminated and the investigator be certain that all factors are constant. The belief is further supported by the statement made to us by the executives of the garment and corset factories, cited in chapter 5 of the majority report. The director of the employment department of the garment factory informs us that between 1913 and 1917 there have been improvements in management methods introduced into his factory; that this might well account for the increased output; that he is unwilling to say that this, or the reduction of hours was the contributing factor; that he has been unable to isolate the factors and that therefore, whether either or both would account for the difference of output, he was unable to determine. We doubt if the investigators had better bases for making conclusions or were quite as open-minded. The executive officer of the corset factory informs us that prior to October, 1917, there was great irregularity in the working hours of its employes; that they came to or left work at their own pleasure; that in point of fact, there was no time clock at the factory and therefore no accurate time record was kept; that while fifty-four hours was the appointed length of the working week, he doubted if many of the employes worked the full time and that there was obviously no means of determining whether they did or not; that after October, 1917, a time clock was installed in the factory and employes were required to come and go regularly and to work full time; that in his judgment these changed factors would undoubtedly account for the increase in output. While we have no information bearing on the data submitted as to the soap factory, we are convinced that the general principle established by the evidence of Mr. Lee and the factory executives quoted will apply here also. Here, too, there probably might be found varying factors not discovered by our investigators, other than changed hours, which would account for the difference in output.

(10) Even if the survey had supported the contention that long hours make for ill-health of workers, there is no evidence to warrant the conclusion that a ten-hour day is a long day; nor is there any evidence to support the contention that an eight-hour day should be the legal maximum working day. Dr. Frederick S. Lee, in "Industrial Efficiency" also published by the United States Public Health Service,

informs us that "industrial psychology tells us to choose the limit of the work-day in accordance with the fatiguing effect of the different specific occupations," and that "each worker and each task possesses a specific standard of strength." If we are at all to rely on this authority, we should discriminate between occupations and the extent to which each contributes to fatigue and ill-health and establish the length of the working day for each as the circumstances warrant. The majority report, while in other respects quoting freely from Lee's brochure, takes no account whatever of this statement which is a direct conclusion from his experiments and those of Mr. Florence. On the contrary, entirely neglecting the differences inherent in specific occupations, recommends a "blanket" bill applicable to all workers and all occupations.

(11) The bill recommended by the majority report is the identical bill which has been submitted to the Illinois Legislature on which it has held hearings, taken evidence and which, after thorough consideration and debate, it has repeatedly rejected. Always one of the principal criticisms of the bill in the Legislature was that it was not a health measure. Inasmuch as the actual health of the workers as affected by the conditions of their employment has not been the criterion or determining factor in the framing of this bill, we believe it should not be recommended as a health measure. This is evidenced conclusively by the fact that graduate nurses, household and agricultural employes are not covered by the proposed bill and by the further fact that all other employes are to be restricted equally without regard to the varying conditions of their employment or nature of their occupations.

(12) Inasmuch as the Saturday afternoon holiday largely obtains and the recommendation of the majority would result in a forty-four hour week, which is little more than a seven-hour day, we venture to say that should such a measure be enacted into law, the women whose efforts would be so restricted and whose position in industry and means of livelihood would be so injuriously affected, would be the first to complain.

For these reasons and others not herein set down, we feel that the investigation of the survey has not been sufficiently thorough or accurate and that the conclusions which are drawn by the majority of the committee are not warranted by such evidence as it was able to secure. We are therefore withholding our concurrence with the majority of the commission.

Milton S. Florsheim,
P. C. Withers.